

Environmental Assessment
Grade and Pave Shoulders on Runway 15/33
Westover Air Reserve Base, MA
9 November 2011

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FINDING OF NO SIGNIFICANT IMPACT
Environmental Assessment
Grade and Pave Shoulders on Runway 15/33
Westover Air Reserve Base, MA

Introduction

This Finding of No Significant Impact (FONSI) was prepared in accordance with the *National Environmental Policy Act* of 1969, the Council on Environmental Quality (CEQ) regulations (40 *Code of Federal Regulations* (CFR) 1500-1508), and the *Air Force Environmental Impact Analysis Process* (32 CFR 989). The decisions included in this FONSI are based upon information contained in the Environmental Assessment (EA), Grade and Pave Shoulders on Runway 15/33, at Westover Air Reserve Base (WARB), Massachusetts. The EA analyzed potential environmental consequences that could result from implementation of the Proposed Action, two sequencing Alternatives, or the No Action Alternative.

Description of Proposed Action and Alternatives

Purpose of and Need for the Proposed Action

The Air Force Reserve Command (AFRC) of the United States Air Force proposes to grade and pave 25' and grade and seed approximately 175' of the shoulders along the entire length of Runway 15/33 at WARB. This would be done while repairing the pavement; improving drainage structures and replacing lighting associated with Runway 15/33. The latter tasks are excluded from further environmental impact analysis as routine facility maintenance and repair that does not involve disturbing significant quantities of hazardous materials such as asbestos and lead based paint. The sequence of the work in the Proposed Action is all work for Phase 1 (at the intersection of the runways, then Phase YG (west of the intersection) then Phase Pad 33 (east of the intersection).

The purpose of the proposed action is to conduct repairs and to correct deficiencies to ensure that Runway 15/33 is available for safe aircraft operations to carry out the mission and support civil aviation at WARB, a joint use airfield. The 439th Airlift Wing provides worldwide air movement of troops, supplies, equipment and medical patients. Runway 15/33 needs to be a Category B runway because of the size and weight of the C-5 aircraft that operate here. Air Force Category B runways are required by DOD Unified Facilities Criteria to be 125' wide and to have 25' wide paved shoulders. The unpaved shoulders need to be graded to allow stormwater to be carried away from the airfield pavements.

No Action Alternative

Under the No Action Alternative WARB would not implement the proposed action. This Alternative would not meet the safety and mission needs stated above.

Sequencing Alternatives

Safe performance of the mission is our first priority. Air Force safety directives seek to make all airfield environments inhospitable to birds and other wildlife to reduce the risk of Bird/Wildlife Aircraft Strike Hazard (BASH). The Air Force natural resources directive seeks to maintain or reestablish viable populations of all native species on AF-controlled lands when practical and consistent with the military mission.

Research here has shown that State-listed birds have not caused damaging strikes to aircraft. The map in Appendix 6 to the EA shows the consensus reached in the past on airfield mowing here. Areas close to airfield pavements are typically mowed 3 or 4 times during the growing season to minimize BASH risk. The other areas are mowed after the rare bird breeding season.

Alternative 1: Sequence work as Phase 1, Phase Pad 33, then Phase YG

Phase 1 (the intersection of the runways) must be completed first to make Runway 05/23 available as soon as possible. This sequence could minimize construction disturbance of the larger rare bird breeding habitat along the runway between Taxiways Y and G until after the breeding season. Potential conflict by Alternative 1 with the August 2012 Air Show could be minimized by ensuring that aircraft could still access certain taxiways during construction.

Alternative 2: Grading for all Phases is done outside the bird breeding timeframe

Grading the shoulders outside of the rare birds' breeding seasons could reduce any potential impacts on them. This Alternative would have to be compatible with efficient construction practices and the Air Show to be practical.

Public Review and Interagency Coordination

WARB provided a 30 day public and agency review period for the Draft EA and Draft FONSI in accordance with NEPA and USAF regulations. WARB published a Notice of Availability for this action both on the WARB website and in a media release on 9 November 2011. It was published in a paid advertisement in the Sunday Republican, a general circulation newspaper in this area, on 13 November 2011. The Draft EA and Draft FONSI were also provided to the main Chicopee and Ludlow libraries. WARB specifically notified the US Fish and Wildlife Service and Massachusetts Audubon Society of the EA and Draft FONSI and distributed copies of the documents to the Massachusetts Division of Fisheries and Wildlife and to the Massachusetts Historical Commission. Comments received through the review process were considered.

Comments on the EA and Draft FONSI

Comments and the Air Force responses are included as an appendix to the EA.

Decision

Based upon a review of the EA and comments submitted the Air Force has decided to proceed with the Proposed Action to Grade and Pave the Shoulders on Runway 15/33. Both Alternative 1 and Alternative 2 hold promise for maintaining flying safety while minimizing impacts on breeding grassland birds. The construction contractor is required to submit a plan to minimize the impacts. Those Alternatives provide viable considerations for that plan.

The potential impacts to human health and the environment were evaluated relative to the existing conditions. The EA assessed anticipated direct, indirect, short-term and long-term project effects. Only minor, short-term, insignificant impacts would be expected from implementation of the Proposed Action listed in the EA.

During construction and operation, the Proposed Action would result in less than significant impacts or no effects to biological, water, cultural or geological resources, socioeconomic, land or visual resources, air quality, noise, hazardous materials, hazardous waste, stored fuels, land

use, transportation systems, safety and occupational health, environmental management, environmental justice or protection of children.

Overall the analysis for this EA indicates that the repair of Runway 15/33 as described under the Proposed Action would not result in or contribute to significant negative cumulative or indirect impacts to the resources in the region.

The Proposed Action to repair or improve the runway, shoulders and other infrastructure is essential to military readiness at WARB. It therefore is a “military readiness activity” per the Migratory Bird Treaty Act (MBTA). Incidental, “takes” of migratory birds due to this project are exempt from MBTA enforcement provisions because the relatively small permanent and larger temporary changes likely to occur will not impact the WARB population of the species.

Conclusion

In accordance with the Council on Environmental Quality regulations implementing the *National Environmental Policy Act* of 1969, as amended, and the *Air Force Environmental Impact Analysis Process*, 32 CFR 989, an assessment of the identified environmental effects has been prepared to Grade and Pave Shoulders on Runway 15/33 at Westover ARB. I conclude that the environmental effects of the proposed construction project at WARB are not significant, that the preparation of an Environmental Impact Statement is not necessary, and that a FONSI is appropriate. The preparation of the EA is in accordance with NEPA, Council on Environmental Quality Regulations, and 32 CFR Part 989, as amended.


STEVEN D. VAUTRAIN, Colonel, USAFR
Commander

13 DEC 11
Date

**Environmental Assessment
Grade and Pave Shoulders on Runway 15/33
Westover Air Reserve Base, MA**

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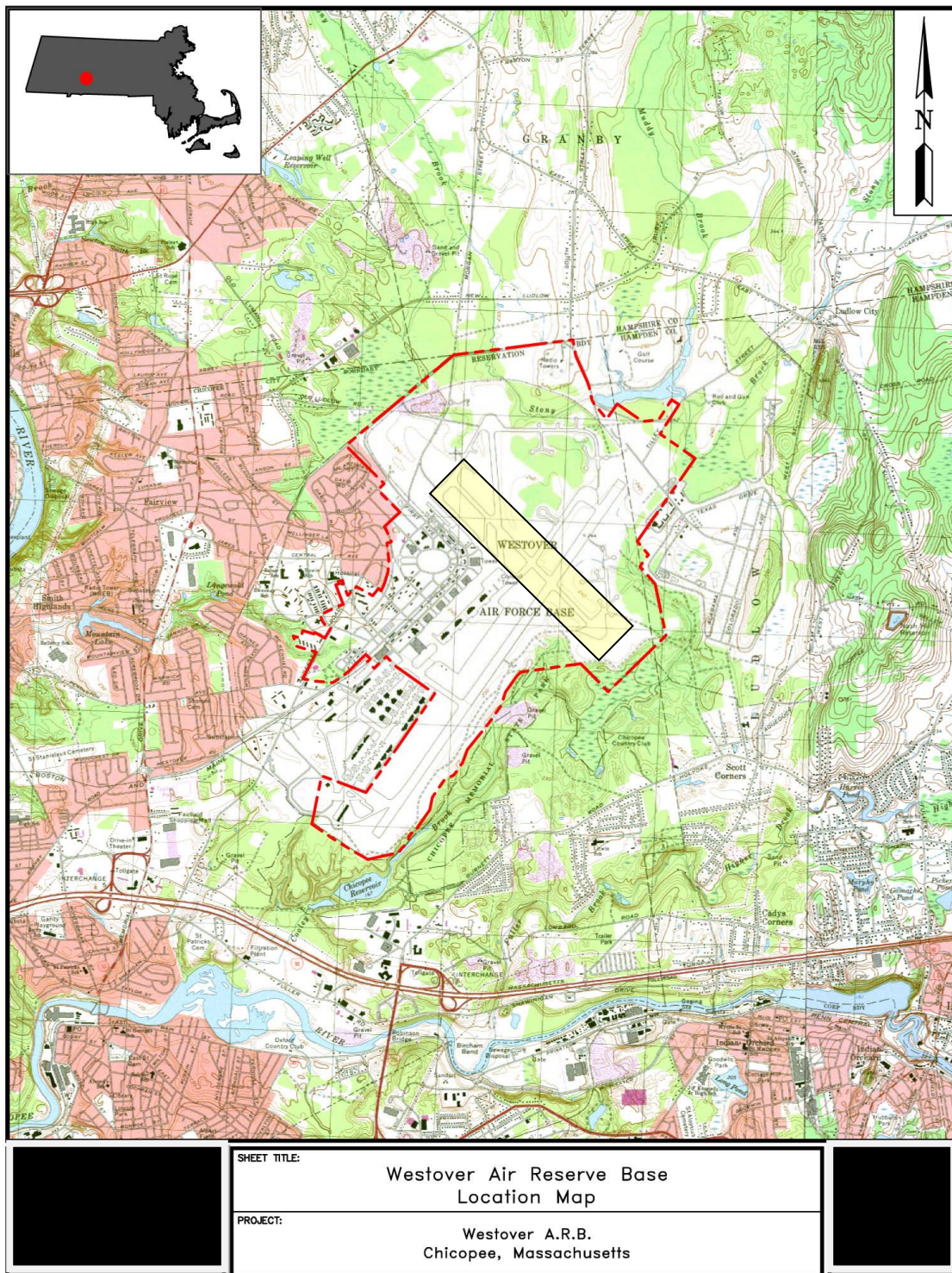


Figure 1. Westover ARB in Chicopee and Ludlow, MA. Project location highlighted in yellow.

1.0 Purpose, Need, and Scope

1.1 Introduction

The Air Force proposes to grade and pave 25' and grade and seed approximately 175' of the shoulders along the entire length of Runway 15/33 at Westover Air Reserve Base in Chicopee, MA (WARB). This would be done in the context of repairing the pavement; improving drainage structures and replacing lighting associated with Runway 15/33. This Environmental Assessment (EA) analyzes and documents potential environmental effects associated with WARB's proposed action.

1.2 Purpose and Need

1.2.1 Purpose of the Proposed Action

The purpose of the proposed action is required to ensure that Runway 15/33 is available for safe aircraft operations to carry out the mission and support civil aviation at WARB, a joint use airfield. This action would significantly enhance aircraft flying training and "real world" flying operations when the winds are not within limits for, or there is construction on, primary Runway 05/23.

1.2.2 Underlying Need for the Proposed Action

The need for the proposed action is to conduct repairs and to correct deficiencies to ensure that Runway 15/33 is available for safe aircraft operations to carry out the mission at WARB.

Mission: the 439th Airlift Wing is capable of providing worldwide air movement of troops, supplies, equipment and medical patients. Support units provide communications, engineering, logistical, medical and security requirements. The peacetime mission includes recruiting, training and supervision of personnel to assure mission readiness. The wing is also responsible for the management of aircraft maintenance and all assigned Air Force combat support real property, equipment and supplies.

Runway 15/33 was originally constructed in 1942 to support World War II efforts. It is 150' wide by 7,082' long. 15/33 refers to the cardinal directions the single strip of pavement is oriented toward. 15 is short for 150 degrees, for takeoffs and landings pointing roughly southeast. 33 refers to 330 degrees, the opposite direction pointing roughly northwest. This is the "cross wind" runway used for training or when winds are out of limits for operations on Runway 05/23, which is the base's main runway.

The runway pavement has longitudinal, transverse and "alligator" cracking. The latter refers to cracks that are similar to the skin on an alligator's back.



Figure 2. Longitudinal and transverse cracking, Runway 15/33.



Figure 3. “Alligator” cracking of airfield pavement at WARB

Water tends to “pond” (accumulate) at the intersection of Runways 15/33 and 05/23. The runway apron pavements need to be milled and replaced to provide positive drainage. The shoulders must be graded and the first 25’ paved because they do not drain well. The covers of drainage structures need to be replaced and 2 new inlets to storm water pipes will be constructed.

A drainage line crossing under one section of the runway appears to have been backfilled with material unlike that surrounding it. That section now experiences frost heaves, making a raised bump across the runway. The soils under Runway 15/33 are and will remain susceptible to frost. The architectural and engineering contractor performed soil investigations to determine the cause of the differential movement in that area. That contractor designed a pavement cross section that will not be subjected to differential movement with the adjoining pavement sections.

The existing Runway 15/33 lighting system is a direct buried system that has been experiencing numerous failures. It is at the end of its useful life span and needs to be completely removed and

replaced with a system designed in accordance with the DOD Unified Facilities Criteria (UFC) 3-260-01 requirements. The lighting system extends from the runway to the night lighting vault.

1.3 Scope

Scoping is the process to determine the breadth of issues to be addressed and to help identify significant environmental issues to be analyzed in depth. The purpose of this process is to de-emphasize insignificant issues and focus the scope of the environmental analysis on significant issues (32 CFR 989.18). The analysis demonstrates whether or not the significant issues involve significant impacts on human health or the environment.

Tiering contributes to scoping. Tiering is where the Air Force uses pre-existing environmental documents to eliminate repetitive discussions and to focus on the issues relating to specific actions (32 CFR 989.10).

Incorporation by reference brings material into this EA by mentioning it when the effect will be to cut down on bulk without impeding agency and public review of the action (40 CFR 1502.21). The incorporated material is cited in the EA and its content is briefly described. The material incorporated by reference is reasonably available for inspection by potentially interested persons within the time allowed for comment. It is also available online at www.westover.afrc.af.mil under the title Runway 15/33 Environmental Assessment.

The following studies are incorporated in this EA, to the extent that they apply, by each reference to them.

Environmental Assessment, Construction of an Armed Forces Reserve Center Complex and Implementation of BRAC 05 Realignment Actions at Westover ARB, MA, February 2007. That study is referred to as, “BRAC EA 2007” for convenience. BRAC EA 2007 is relevant here for its analysis of the impacts of a large construction project on WARB.

Environmental Assessment, Explosive Ordnance Disposal Training Facility, Munitions Storage Facility, and Munitions Maintenance and Inspection Facility, Westover ARB, MA, August 2003; That study is referred to as, “EOD EA 2003” for convenience. EOD EA 2003 is relevant here for its analysis of the impacts of a construction project at the edge of the airfield on WARB.

Environmental Assessment for Repair of Airfield Pavement and Lighting, Runway 03R/21L Travis Air Force Base, Fairfield, California, November 2009. That study is referred to as, “Travis EA 2009” for convenience. Travis EA 2009 is relevant here for its analysis of the impacts of a large, similar construction project to repair airfield pavement and lighting for a runway at an Air Force Base in Fairfield, California used by C-5 aircraft.

1.3.1 Human Health Issues

The proposed action does not raise significant human health issues needing further analysis. Exposures to construction-related noise, dust, other emissions, and vehicle traffic would be less than or similar to those already determined not to be significant in EAs/FONSI for other, comparable projects cited in this EA. The numbers and types of aircraft operations on that runway are not expected to change, so exposures to aircraft noise or accidents would not change.

1.3.2 Environmental Issues

While no federal endangered or threatened species or their critical habitats are present, there are environmental issues concerning state-listed and migratory species that will be addressed in this EA. Extensive grading and vehicle traffic could temporarily interfere with breeding by rare grassland bird and moth species throughout the project area. Paving the shoulders would move the present weedy habitat immediately next to the runway that is now frequented by other birds.

Storm-water from the runway would no longer be intercepted by the existing drainage structures positioned along both sides of and immediately adjacent to the runway. Instead, stormwater would flow across the paved and grassy shoulders where most would infiltrate into the ground. Any remaining runoff would enter storm drains that are located further away from the runway within the grassy airfield.

1.4 Public Participation and Involvement

The Air Force invites public participation in the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision making. All agencies, organizations, and members of the public having a potential interest in the proposed action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decision making process. Public participation opportunities with respect to this EA and decision making on the proposed action are guided by 32 CFR Part 989. Upon completion, the EA will be made available to the public for 30 days, along with a draft Finding of No Significant Impact (FONSI). Copies of the EA are available during the review period online at www.westover.afrc.af.mil under the title Runway 15/33 Environmental Assessment, and at the following local libraries:

Chicopee Library Main Branch
449 Front Street
Chicopee, MA 01013

Hubbard Memorial Library
24 Center Street
Ludlow, MA 01056

At the end of the 30-day public review period the Air Force will consider any comments submitted by individuals, agencies, or organizations on the proposed action, the EA, or draft FONSI. As appropriate, the Air Force may then execute the FONSI and proceed with implementation of the proposed action. If it is determined prior to issuance of a final FONSI that implementation of the proposed action would result in significant impacts, the Air Force will publish in the *Federal Register* a Notice of Intent to prepare an Environmental Impact Statement, commit to mitigation actions sufficient to reduce impacts below significance levels, or not take the action. Throughout this process, the public may obtain information on the status and progress of the proposed action and the EA through the Westover ARB Public Affairs Office by calling (413) 557-2020, or at www.westover.afrc.af.mil under the title Runway 15/33 Environmental Assessment.

1.5 Regulatory Framework

A decision on whether to proceed with the proposed action rests on numerous factors such as mission requirements, schedule, availability of funding, and environmental considerations. In addressing environmental considerations, Westover ARB is guided by relevant statutes (and their implementing regulations) and Executive Orders that establish standards and provide guidance on environmental and natural resources management and planning.

The most relevant statutes for this project include the National Environmental Policy Act, Sikes Act, Migratory Bird Treaty Act, Endangered Species Act, and Energy Independence and Security Act. For a listing of statutes and regulations organized by resource see Table ES-1: Major Environmental Statutes, Regulations, and Executive Orders Applicable to Federal Projects, on pages ES-2 and ES-3 in BRAC EA 2007.

The full text of the laws, regulations, and EOs are available on the Defense Environmental Network & Information Exchange Web site at <http://www.denix.osd.mil>.

1.6 Logic, Scope and Organization of the EA

This EA has been developed in accordance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations issued by the President's Council on Environmental Quality (CEQ) and the Air Force. The purpose of the EA is to inform decision makers and the public of the likely environmental consequences of the proposed action and alternatives.

This EA identifies, documents, and evaluates the potential environmental effects of proposed actions at Westover ARB in Chicopee, Massachusetts. An interdisciplinary team of environmental engineers, a wildlife biologist, a planner, design and construction engineers, and project managers has reviewed this analysis of the proposed action and alternatives in light of existing conditions that has identified relevant beneficial and adverse effects associated with the action.

Repairing the pavement, improving drainage structures and replacing lighting associated with Runway 15/33 would qualify for Air Force Categorical Exclusion A2.3.10. It excludes from further impact analysis routine facility maintenance and repair that does not involve disturbing significant quantities of hazardous materials such as asbestos and lead based paint, as shown on AF form 813, 28 September 2011. The insignificant issues from those portions of the project are summarized in **3.0 Affected Environment** below.

Section 1.0 of the EA provides the purpose, need, and scope. The proposed action and alternatives, including the no action alternative, are described in Section 2.0. Conditions existing as of 2011, considered to be the "baseline" conditions, are described in Section 3.0, Affected Environment. The expected effects of the proposed action are presented in Section 4.0, Environmental Consequences, for each environmental resource. Section 4.0 also addresses the potential for cumulative effects. Mitigation measures are identified where appropriate. Section 5.0 presents findings and conclusions.

2.0 Proposed Action and Alternatives

2.1 Introduction

This section describes the Air Force's preferred alternative to grade and pave shoulders, repair the pavement, replace lighting and secure drainage structures, all associated with Runway 15/33 at WARB.

2.2 The Proposed Action

The Proposed Action involves multiple tasks. One is to grade shoulders approximately 200' from the runway and pave the portions within 25' adjacent to the runway as required by UFC 3-260-01 for a Class B runway. The paved shoulders will be graded to a 2 percent slope and include a 9" base course and 3" of asphalt pavement. The unpaved portion will be graded to a 1 percent slope and compacted and sloped for proper drainage and seeded to establish grass.

The project would include work at the intersection of Runways 15/33 and 05/23. The work would replace the base and sub-base and rebuild the full depth of pavement at the runway intersection, and includes re-grading and repaving to provide positive drainage of the intersection. The pavement cross sections consist of asphalt and concrete with asphalt. The work will also include milling and paving of the entire Runway 15/33 as justified by the 2008 Air Force Pavement Condition Index (PCI) report. The contractor would replace the base and sub-base and rebuild the full depth of pavement above the storm drain at the Runway 33 approach end, ensuring proper grading for drainage. Also at that end the contractor would demolish paved Apron J, leaving a narrow access road in its place. Then the contractor will paint airfield pavement markings.

The project would also replace airfield lighting for Runway 15/33 and the covers of storm drain inlets close to and parallel with the runway.

2.3 Alternatives to the Proposed Action

2.3.1 Introduction

The Air Force must analyze the reasonable alternatives to the proposed action and the "no action" alternative. "Reasonable" alternatives are those that meet the underlying purpose and need for the proposed action and that would cause a reasonable person to inquire further before choosing a particular course of action. The Air Force may expressly eliminate alternatives from detailed analysis, based on reasonable selection standards (for example, operational, technical, or environmental standards suitable to a particular project (32 CFR 989.8).

To be considered reasonable, an alternative must be "ripe" for decision making (any necessary preceding events having taken place), affordable, capable of implementation, and satisfactory with respect to meeting the purpose of and need for the action.

2.3.2 No Action Alternative

Air Force regulations require that the EA include and evaluate the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the proposed action and alternatives can be evaluated. Under the No Action Alternative, Westover ARB would not implement the proposed action. The No Action Alternative is evaluated in this EA.

2.3.3 Construction Sequence Alternatives

While they are not alternatives to doing the proposed action, Construction Sequence Alternatives can be ways to minimize impacts while performing the action. The sequence for implementation of the proposed action must balance the needs of the flying mission and construction seasons and timeframes. The norm is to mobilize once and complete a construction project after a continuous effort. Sequencing or scheduling the project would need to follow flying, funding, contracting and construction requirements to be reasonable. Examples of unreasonable alternatives are trying to do the project in winter or artificially breaking the project up solely to spread impacts across years. Weather will dictate when the project will be able to begin after winter. The Air Show/Open House is tentatively scheduled for August 2012. It is a potential constraint on the construction schedule.

The project is presently divided into 3 phases in the design plans. Phase 1 is all actions necessary at the intersection of the runways. It is estimated to begin on 1 March 2012 and last for 25 – 30 days.

Phase 2 is all actions at the northwestern end of Runway 15/33, between taxiways Y and G. It is estimated to begin on 15 April 2012 and last for 100 days. This EA refers to it as Phase YG to avoid confusion when analyzing alternate Phase schedules.

Phase 3 is the actions at the southeastern end of that runway from the intersection to Pad 33. It is estimated to begin on 1 August 2012 and last for 69 days. This EA refers to it as Phase Pad 33.

Changing the sequence of construction Phases could be a central feature of the contractor's plan required in Figure 6 above.

2.3.3.1 Alternative 1: Sequence work as Phase 1, Phase Pad 33, then Phase YG.

This sequence could minimize disturbance (via grading and other construction activities) of the larger bird breeding habitat along the runway until after the breeding season. Phase 1 must be completed first to make Runway 05/23 available as soon as possible. Potential conflict with the Air Show could be minimized by ensuring aircraft could get to Taxiway R via L, Y, F and Pad 19. That would depend upon work to rebuild F being completed before then, and work on the Runway 15 approach end not interfering with aircraft taxiing between Y and F. The Air Show is part of our mission and is an opportunity for the public to meet the Air Force and see aircraft in ground and flying displays. The Air Show is planned for August of 2012.

2.3.3.2 Alternative 2: Sequence grading for all Phases to be done outside the bird breeding timeframe.

Grading all of the shoulders at once could reduce impacts on rare birds if done outside their breeding seasons. It might also magnify the effects of dust and erosion. Any sequence would require stabilizing slopes of bare soil with newly seeded grass or calcium chloride or a 'tackifier', which is a bonding or adhesive agent; and robust water erosion and sedimentation controls.

Shifting the Phase schedules to accomplish construction at different dates might benefit breeding of rare species without increasing BASH risk. Therefore alternative schedules are further evaluated in this EA.

2.3.4 Alternative Removed from Further Consideration

Do not mow to maintain vegetation at 7"-14" in areas where the runway is closed to aircraft operations.

The Air Force requires airfield vegetation to be mowed to reduce the risk of the Bird/Wildlife Aircraft Strike Hazard (BASH). See Appendix 1, the Present WARB BASH Mowing Map. That mowing is a possible source of disturbance to breeding birds and mortality to their eggs or young. This alternative would remove the mowing disturbance if there were times and places where taller grass might not be likely to contribute to BASH risk.

For the reasons that follow this alternative is not practical and will not be analyzed in the EA. It would require a waiver by the USAF Safety Center from its new mowing policy mandated in Air Force Instruction (AFI) 91-202. See Appendix 2. A graphic depiction of where the new mandate would require repeated mowing is shown in Appendix 3. It would maintain airfield vegetation between 7" and 14" in the areas shown from runways and taxiways out to the yellow lines. Those lines depict 500' beyond the Aircraft Movement Area (AMA) and any taxiways and aprons outside the AMA. First, there is very little vegetation within the yellow lines for Runway 15/33 that is not also within 500' from a taxiway that would remain in operation. Further, the Safety Center's BASH Team has indicated that it would not grant any waivers that do not reduce the numbers of birds on an airfield. The new mowing policy will be the subject of a separate Environmental Impact Analysis Process.

3.0 Affected Environment

This chapter describes the relevant environment at Westover ARB, providing baseline information to allow the evaluation of potential environmental impacts that could result from the Proposed Action, the Alternatives, or the No Action Alternative. As stated in 40 CFR §1508.14, the human environment includes natural and physical resources and the relationship of people to those resources. The environmental baseline resource areas described in this chapter were selected after identifying the potential concerns related to the Proposed Action and alternatives.



Figure 4. C-5 Aircraft and Airfield Grasslands at Westover ARB

3.1. Resource Areas of Significance to this Project

Water, Biological and Cultural Resources are the only resource areas of significance to this project. This affected environment is described very well in the EOD EA, pages 3-7 to 3-20. Extracts from those descriptions follow below.

3.1.1 Water Resources

3.1.1.1 Definition of Resource

Water resources include surface water, groundwater, and floodplains. They are valued for their quantity, quality, and the demand for potable, irrigation, and industrial purposes.

Surface water resources consist of lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. Stormwater flows, which may be exacerbated by high proportions of impervious surfaces associated with buildings, roads, and parking lots, are important to management of surface water. Stormwater also is important to surface water quality because of its potential to introduce sediments and other contaminants into lakes, rivers, and streams.

Groundwater consists of the subsurface hydrologic resources. It is an essential resource often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater typically may be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

Floodplains are areas of low-level ground present along a river or stream channel. Such lands may be subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding typically hinges on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which evaluates the floodplain for 100- and 500-year flood events. Federal, state, and local regulations often limit floodplain development to passive uses such as recreational and preservation activities in order to reduce the risks to human health and safety.

3.1.1.2 Existing Conditions

Surface water. See Figure 5. Westover ARB has extensive natural and man-made surface drainage. Stony, Cooley, and Willamansett Brooks are the primary drainages of Westover ARB. Most of the water that is discharged is collected from impervious surfaces throughout the installation and conveyed via ditches, culverts, and underground storm sewer lines with oil/water separators that empty into these brooks.

Cooley Brook receives discharges from most of the industrial areas of the Base. A constructed wetland bio-remediates stormwater that contains fluids used to remove ice from aircraft before the water reaches the Brook. The southern portion of the brook has been dammed to form the Chicopee Reservoir. It is not used for drinking water but is used as a bathing beach in Chicopee Memorial State Park. Cooley Brook is categorized as “Attaining Some Uses; Other Uses not Assessed”. Cooley Brook is not technically impaired and a Total Maximum Daily Load (TMDL) has not been completed for it.

Stony Brook receives drainage from the Base through a network of storm sewers. Stony Brook is dammed just upstream of the Base to form Wade Lake. The Brook leaves the Base and flows to the north on its circuitous route to the Connecticut River. It is impaired for E. coli, turbidity, and non-native macrophytes. A TMDL has not been established for Stony Brook.

Willimansett Brook receives drainage from the urban portion of the Base through a storm drainage system that primarily serves office buildings. This drainage forms the headwaters of the Brook, which eventually flows to the Connecticut River. It does not drain the project area.

Groundwater. Groundwater in the area is primarily contained in the shallow delta outwash plain aquifer that underlies Westover ARB. This unconfined aquifer lies above glacial-lacustrine fine-grained sediments (i.e., silts and clays). The water table within the unconfined shallow aquifer ranges from 5 to 20 feet in depth and is significantly influenced by topography. Short-term disturbances from construction activities during the Proposed Action would have no significant impact to groundwater.

Drinking Water. The City of Chicopee supplies drinking water for Westover ARB. The drinking water comes from treated surface water.

Floodplains. Floodplains are defined as areas adjoining inland or coastal waters that are prone to flooding. FEMA Flood Insurance Rate Maps covering Westover ARB have not been prepared. The FEMA maps that illustrate Stony Brook show that there are floodplains associated with the brook as it enters and exits the Base.

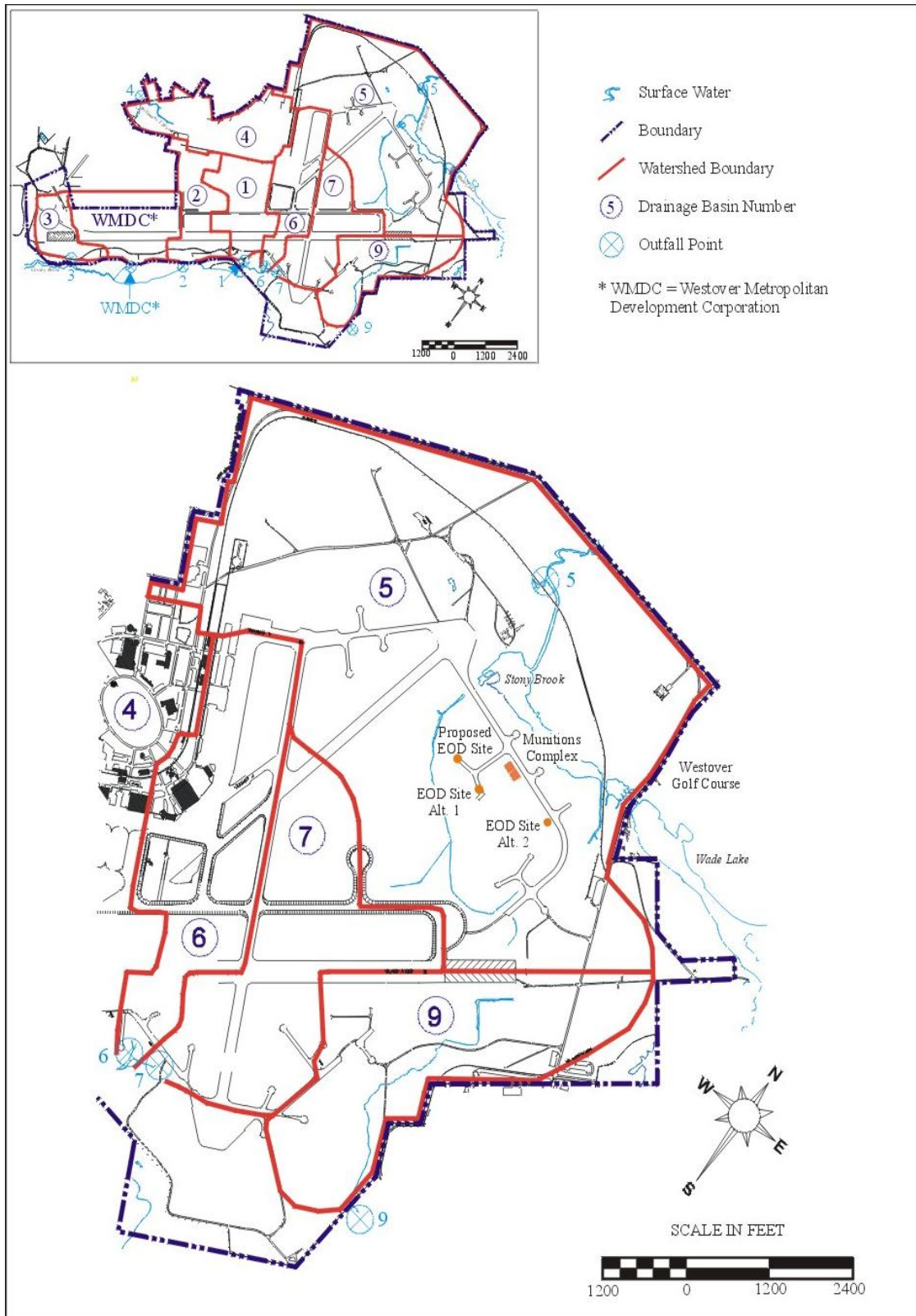


Figure 5. Drainage Boundaries in EOD EA 2003 Figure 3.3-1. Surface Water Features on Westover ARB

3.1.2 Biological Resources

Extracted from EOD EA 2003.

3.1.2.1 Definition of Resource

Biological resources include the native and introduced plants and animals that make up natural communities. Natural communities are closely linked to the climate and topography of the area. Biological resources discussed below include vegetation, wildlife, threatened or endangered species, and wetlands.

3.1.2.2 Existing Conditions

Vegetation

Westover ARB lies within the Eastern Broadleaf Forest (Oceanic) Province, characterized by temperate deciduous forests with tall, broadleaf trees that provide a continuous and dense canopy in summer, but shed their leaves completely in winter. A 1994 survey of the base's botanical resources reported major native-plant communities of deciduous woodlands, native grasslands, and open wetlands, along with approximately 60 acres of pine plantations. The survey identified a total of 463 species, with total flora estimated to be 450-500 species (USAF, 1998b).

Numerous lichen and moss species were also found, with the wetland areas on base containing the greatest diversity of these species (USAF, 1998b)....

Westover ARB has the largest contiguous grasslands in the Connecticut River Watershed.

These open grasslands, located throughout southern, central, and northern portions of the base, are mowed with varying frequency, and differ greatly in composition; some are dominated by native species of grasses and herbs, while others are dominated almost entirely by European pasture grasses (USAF, 1998b).

Wildlife

The environmental setting at Westover ARB, with its open grasslands, wooded and riparian areas, and wetlands, make it an attractive habitat to many animal species. Common mammalian species within the local area and observed on Westover ARB include white-tailed deer, red fox, coyote, raccoon, woodchuck, gray squirrel, southern flying squirrel, eastern chipmunk, eastern cottontail, northern short-tailed shrew, and white-footed mouse... (USAF, 1998b).

Bird surveys have reported that more than 70 different bird species can be found on

Westover ARB. The most abundant native birds in the area include mourning dove, eastern king bird, blue jay, American crow, American robin, killdeer, red-winged blackbird, black-capped chickadee, bobolink, and eastern phoebe. Common seasonal granivores (i.e., seed-eaters) include eastern meadowlark, horned-lark, field sparrow, and Savannah sparrow. Starling, house sparrow, rock dove, house finch, turkey vulture, and miscellaneous blackbirds are also common. Raptors observed on base, especially during spring and fall migrations, include red-tailed, broad-winged, red shouldered, and rough-legged hawk, and American kestrel. Wading birds include great blue heron, greater yellowlegs, and white-rumped sandpiper. Waterfowl species include mallard, Canada goose, and black duck. Herring gull, ring-billed gull, and greater blackbacked gull are also present (USAF, 1998b).

Previous surveys have identified 18 herptile species (11 amphibian and 7 reptile) on the base, although the total number of herptile species may be higher because of the habitat potential of the base and the limitations of the survey. Common amphibians identified on Westover ARB include wood frog, bullfrog, gray tree frog, spring peeper, green frog, American toad, Fowler's toad, redback salamander, and eastern spotted newt. Common reptiles include the eastern garter

snake, northern ringneck snake, black racer, northern water snake, common snapping turtle, and spotted turtle (USAF, 1998b).

Threatened or Endangered Species

A listed species, provided protection under the ESA, is so designated because of danger of its extinction as a consequence of economic growth or development without adequate concern and conservation. No federally-listed threatened or endangered species have been found on Westover ARB (USAF, 1998b). However, several state-listed species occur on the base. Table C-1 shows the protected species that occur on the base or may occur nearby. There are several rare or scarce plant species that have been documented on Westover ARB. The wild lupine (*Lupinus perennis*), a MNHESP “S3 species,” has been documented within the open grassland areas in the northeastern portion of the base (Jenkins 1995). The wild lupine is locally common on Westover ARB; however, it does not have legal protection in Massachusetts. This species prefers maturing pitch pine stands on sandy soil but has been documented within the open grassland areas in the northeastern portion of the base (USAF, 1998b).

Westover ARB supports the largest populations of two State-listed bird species in the six state New England region: the upland sandpiper (*Bartramia longicanda*), State-listed as endangered, and the grasshopper sparrow (*Ammodramus savannarum*), State-listed as threatened. The upland sandpiper and the grasshopper sparrow have been documented in grassy areas near the runway (Melvin, 2001). In addition, several other State-listed species have been documented on the base, including: the loggerhead shrike (*Lanius ludovicianus*) (State-listed as endangered); the northern harrier (*Circus cyaneus*) and vesper sparrow (*Pooecetes gramineus*) (both State-listed as threatened); and the sharp-shinned hawk (*Accipiter striatus*), Cooper’s hawk (*Accipiter cooperii*), and blackpoll warbler (*Dendroica striata*) (State-listed special concern species) (USAF, 1998b). The peregrine falcon (*Falco peregrinus*), formerly federally- and State-listed as endangered but recently delisted at the federal level subject to further monitoring, has also been documented on the base as a transient species (USAF, 1998b). The pine barrens zanclognatha (*Zanclognatha marta*) (State-listed as threatened moth species) has also been identified on the base (USAF, 1998b).

Bird/Wildlife Aircraft Strike Hazard (BASH)

WARB works to comply with Air Force Instruction 91-202, Air Force Mishap Prevention Program requirement to maintain airfield vegetation height at between 7”- 14”. That height is prescribed by the Air Force Safety Center and is standard throughout the Air Force to reduce the number of birds in the airfield environment. Figure 8., WARB BASH Mowing Map is in Appendix 1. This map shows the present mowing regime at WARB. It is based upon the 2001, 2004 and 2009 decisions of the WARB Bird Hazard Working Group (BHWG) that delaying mowing until 31 July in green areas on the map would not pose unacceptable risk of bird or other wildlife strikes to aircraft. That decision was consistent with the BHWG’s authority in AFI-91-202. Research by Peters and Allen, 2010 supports that position. The Proposed Action and Alternatives would occur in the area where vegetation is currently maintained at 7”- 14”. See Appendix 7 for further information on the interplay between the WARB Mowing Plan and Integrated Natural Resources Management Plan.

3.1.3 Cultural Resources

Partially Adapted from EOD EA 2003.

Cultural resources are archaeological, historical, and Native American items, places, or events considered important to a culture, community, tradition, religion, or science. Archaeological and historic resources are locations where human activity measurably altered the earth or left deposits of physical or biological remains.

In 1994, an archaeological and architectural reconnaissance survey of Westover ARB identified seven broad areas of archaeological sensitivity, defined as having known or potential archaeological remains (USAF, 1995a). In general, these areas are distributed along the perimeter of the base where military construction and other activities have been less extensive. The project area is not within any of these seven areas and has been extensively altered by farming and during construction and landscaping of the airfield. Thus the context of any remaining artifacts was destroyed long ago.

In 1995 Runway 15/33 was one of 41 facilities on WARB evaluated in consultation with the State Historic Preservation Officer, which in this state is Massachusetts Historical Commission (MHC). MHC found a strong case for local significance of WARB to be eligible for listing on the National Register of Historic Places (NRHP) (MHC 1995). MHC wrote that WARB appears to be eligible under Criteria A and C for its associations with military operations during WW II and the Cold War era, and for survival of historic building and structure types representative of air base design from those historic periods, respectively.

The Form F describing Runway 15/33 noted that it had been repaved in 1980. The Design Assessment on the Form noted that, “although added to and expanded, the original runway system designed for Westover Field in 1939-40 is still partially discernable.

The Historical Narrative says in part, “Westover followed Grenier as runways and taxiways were laid on a 9” bed of clean sand with approximately 2 1/2” of asphalt over 6” of Portland cement. The runway surface was 75’ wide cresting in the center and sloping to each side at a 1 degree angle. At each side the runway surface was 37.5’ of shoulder which was 6” thick soil cement pavement.... Much of the significance of Westover’s runway system lies in the initial scope of its planning which anticipated future use by larger aircraft requiring longer runways. Unlike many World War II airfields which became outmoded, Westover was engineered for long term use.” (Parsons 1995). Part of that use was its later designation as a Class B crosswind runway pursuant to Unified Facilities Criteria (UFC) 3-260-01, Airfield and Heliport Planning and Design. UFC Table 3-2 requires Class B runways for Air Force cargo aircraft use to be 150’ wide and to have 25’ wide paved shoulders (DOD 2008).

Over the time since 1995 many changes were made to those 41 facilities at WARB. Twenty have been demolished. The changes were made in consultation with MHC. The changes led to WARB having the remaining facilities re-evaluated for their Section 106 “eligibility for listing” on the NRHP in 2011. Architectural historian John Ferguson of the USDA Forest Service made that determination (Ferguson 2011). He found Runway 15/33 to be ineligible for the NRHP and noncontributing to a potential historic district. While it retains historic significance it lacks a

preponderance of integrity of location, design, setting, materials, workmanship, feeling and association under 36 CFR 63.

“Runway 1533 is significant for its association with Westover’s WWII and Cold War-era operations. However, Feature 1533 has undergone considerable alteration since its period of significance that has resulted in an irreversible loss of character-defining historic fabric. Although partially discernable, large sections of this runway have been removed and/or obscured by newer runway systems. Furthermore, discernible remnants of the original feature actually retain little original fabric as they have been significantly widened and resurfaced to accommodate new equipment. Runway 1533 is essentially a new feature without historic integrity.” (Ferguson 2011).

3.2 Resource Areas of No Significance to this Project

The resource areas that would *not* be impacted are not fully described in this chapter, nor evaluated in Chapter 4 (40 CFR 1502.15). These are listed below, with a brief explanation for their omission from the analysis. As stated in 4.1 No Action Alternative, implementation of the No Action Alternative would not change current any environmental conditions or consequences from the 2011 baseline. The sequencing alternatives merely change the order in which Phases or tasks within the Phases would be done. Changing the order would not change the resulting impacts on these resources.

Air

The Environmental Protection Agency (EPA) has promulgated ambient air quality standards and regulations. The EPA has classified the Springfield area, including the area of the Proposed Action (Hampden County, MA) as in moderate non-attainment for the criteria pollutant ozone. Federal actions located in non-attainment areas are required to demonstrate compliance with the general conformity guidelines to regulate the emission levels resulting from the project.

BRAC EA 2007 shows that the emissions associated with constructing that Proposed Action were not subject to the General Conformity Rule requirements. The increase in annual emissions from the Proposed Action in BRAC EA 2007 would not make up 10% or more of the available emissions inventory, and would therefore not be regionally significant. Air quality impacts were therefore considered to be not significant.

See also EOD EA 2003, paragraph 4.1 AIR RESOURCES, for further analyses and non-significant results for WARB.

Paragraph 4.2.3.1 of Travis EA 2009 deals with Construction Emissions Impacts.

The estimated worst-case annual construction emissions under the Travis Proposed Action are shown in Table 4-1 of that EA. As at WARB, the Travis Proposed Action would cause temporary, short-term air quality impacts as a result of construction emissions. Construction-related impacts are expected to be local (i.e., confined to the construction site area) and limited to the duration of the construction activities. Project construction would implement the applicable fugitive dust control measures defined in the state air quality guideline. Therefore, potential air quality impacts during construction of the Travis Proposed Action would be less than significant.

Given the insignificant outcomes of air analyses for a large construction project here and a larger runway construction project in California, air quality impacts are considered not to be significant for this runway project at WARB. See Appendix 4 of this EA for an expanded version of this information.

Noise

Paragraph 4.3 of Travis EA 2007 describes noise impact criteria and discusses potential project-related noise impacts. As at Travis, no change in noise levels is anticipated above existing levels after construction. Noise is generally defined as sound that is undesirable if it is intense enough to damage hearing, it interferes with speech communication and sleep, or it is annoying.

Typical construction-related noise is expressed in terms of schedule, equipment used, and types of activities. Noise levels associated with trucks, backhoes, concrete mixers, jackhammers, rock drills, and pneumatic tools range from 85 to 98 dB 50 feet from the source. Depending on the source and the types of activities, noise associated with construction activities would be temporary, ordinarily occur only during daytime hours, and vary in levels. Noise associated with flightline activities at Travis is approximately 80 to 85 dB CNEL. Noise associated with flightline activities at WARB is at those levels or less (WARB 1996).

Also as at Travis, at WARB there are no sensitive receptors, such as residences or schools, within 1,000 feet of the site. Noise impacts resulting from implementing the Proposed Action would be less than significant.

Geological Resources

Extracted from EOD EA 2003.

Surface geology controls both the topography and the drainage patterns of the northern portion of the base where the project area is located. Westover ARB is generally located on the surface of a Pleistocene outwash delta that was built by glacial melt waters associated with the glacial Chicopee Delta. These fan-shaped deposits of sand developed in the now vanished Glacial Lake Hitchcock, whose deposits of silt and clay underlie the sandy outwash. The topography of the project area can be characterized as reasonably flat sand plain with gentle undulations. For the most part the project area contains well- and excessively-drained sandy loams of glaciofluvial origin. The major soil unit present on base is the Urban Land Hinkley-Windsor association (Uk); areas disturbed or destroyed by urban development are classified as Ub.

Impacts to geological resources would result primarily from disturbance of the ground during construction activities such as excavation and grading. These activities would affect a shallow layer of the underlying geology (including soils). The topography would be slightly affected by grading. The Proposed Action would result in approximately 64 acres being disturbed for the entire construction project. Given the prescribed use of erosion controls and the fact that the area will be used for the same purposes after construction of the project, involving limited disturbance, impacts to soils and geology would be insignificant.

Transportation

Adapted from EOD EA 2003.

Transportation systems facilitate the movement of people, goods, and materials on the ground, on water, or through the air. Users must be able to reach their destination within reasonable limits of time, cost, and convenience for transportation systems to be adequate. The Proposed Action is located at the northern end of WARB and intersects with Runway 05/23. The transportation system discussed in this EA includes a network of roads and gates providing access to the base.

State Route (SR) 33 is located less than one mile west of Westover ARB and is the main thoroughfare providing access to the base. SR 33 intersects with Interstate 90 (the Massachusetts Turnpike) approximately two miles southwest of the base. I-90 is an east-west route between Boston and New York State. Interstate 91 runs north-south approximately five miles west of the base.

Westover's main ("Industrial" or "ID") gate is located off SR 33 on Industrial Road and is open 24 hours a day, 7 days a week. The ID gate handles most traffic. The James Street gate is located north of the main gate off of SR 33 and is open during normal daytime hours. The gate on the east side of WARB off New Ludlow Road is not open. Approximately 1,450 vehicles enter and exit the base Monday through Friday (USAF, 1995c). Approximately 625 reservists enter the base every weekend for training. There are no major traffic congestion problems on base, and traffic flow on base is good during the workweek and on training weekends.

Ground vehicle traffic is minimal in the area of the Proposed Action because it is usually open as an active runway. Ground access to the sites must be coordinated with Airfield Operations and Security Forces personnel. Construction workers and equipment would enter the base through the ID Gate and follow Patriot Avenue to Perimeter Road, Perimeter Road to unnamed access roads or taxiways and then onto Runway 15/33 and its environs.

A number of construction projects performing similar tasks on other airfield pavements have been ongoing for the past few years. Truck traffic associated with those projects is noticeable, and can slow down the process at the vehicle inspection area prior to entering the main portion of WARB. Those projects are scheduled to be completed before this one begins, however. Thus, traffic impacts from this construction project will be insignificant.

Land Use and Visual Resources. The action would occur on land that is already used for similar purposes and would involve structures that are similar to those in place. Therefore, no impacts to land use or visual resources would occur.

Socioeconomic Resources.

Adapted from Travis EA 2009.

The Proposed Action would not cause changes in the rate of population growth, the demographic characteristics of the Base or county, employment, or economic activity on base or in the county. There would be no change in personnel authorizations.

Implementation of the Proposed Action would have a short-term beneficial impact on socioeconomic resources because it would require a temporary increase in civilian contract employees (construction workers) at the Base during construction of the airfield. Given the supply of construction labor in the region, it is anticipated that many construction workers would

commute to the work site and would not require temporary housing. There would be minor, short-term economic benefits to local convenience businesses from construction workers purchasing meals, fuel, and other commodities near the Base. The impacts to socioeconomic conditions from temporary employment would be beneficial but minor compared with the Base or the county economy.

The Proposed Action would not result in a long-term change in socioeconomic conditions because operation of the repaired airfield is not anticipated to increase growth in the region. Given all of these results there would be no socioeconomic impacts from the project.

Environmental Justice and Protection of Children

Adapted from Travis EA 2009

This section discusses the potential effects to minority populations, low-income populations and children from implementation of the project. The action would occur entirely on base. Any off-base noise or transportation impacts would not disproportionately affect any low income or minority populations, or children, and there would be no environmental justice impacts.

Construction sites can be attractive to children and are dangerous. However, the Proposed Action site is not located near family housing areas or schools. The construction site, excavations, and materials would be properly secured during construction.

Hazardous wastes produced at the site during construction would be properly managed and disposed of in accordance with applicable regulations and would not pose a disproportionate risk to minority populations.

No minority or low-income populations in the surrounding area would be disproportionately affected by the Construction on Runway 15/33; therefore, no significant impacts would occur.

Other Environmental Programs

There are no underground storage tanks (UST) involved in the action and there would be no change in wastewater generation. No existing buildings would be modified, so no disturbance of contaminants such as lead-based paint (LBP), polychlorinated biphenyls (PCB), or asbestos is expected.

Safety and Occupational Health

Adapted from Travis EA 2009.

No Action Alternative

Implementing the No Action alternative could affect safe operation of the runway. The runway currently does not meet design standards. It requires frequent maintenance and shut-down of flight operations because of lighting problems, heaved pavement, cracks in the pavement and stormwater pooling on the runway. Because it does not meet standards, operation of the runway is conducted under an Air Force waiver. Operation of the runway under the No Action alternative would continue the inefficiencies associated with frequent runway maintenance and could adversely affect human health if an accident occurred as a result of operation of a runway that does not meet standards.

Proposed Action and Sequencing Alternatives

Implementing the project would require construction activities, such as excavation, grading, concrete crushing, materials hauling, paving, painting and other operation of construction equipment. Implementation of the Proposed Action or alternatives would follow all applicable rules and regulations regarding safety and occupational health. A health and safety plan for construction would be prepared that would include requirements, such as securing construction areas to prevent unauthorized personnel from entering the work sites. In addition, all workers would be provided with appropriate training and personal protective equipment including, but not be limited to, approved hard hats, safety shoes, gloves, goggles, eye/face protection, safety belts, harnesses, respirators, hearing protection, and traffic safety vests. With implementation of the health and safety plan, the potential for adverse impacts to safety and occupational health are expected to be minor and limited to the duration of construction.

Implementation of the project would upgrade the runway and airfield to meet current design standards. Compliance with these standards would reduce the risk for accidents that could affect human health and safety. The reduced risk to human health and occupational safety is considered a beneficial impact.

Hazardous Materials, Wastes, Environmental Restoration Program Sites, and Stored Fuels

Paragraph 4.4 of Travis EA 2009 discusses these topics. Both WARB and Travis AFB implement procedures in directives and specific plans for properly handling hazardous materials and managing and disposing of hazardous wastes.

The Proposed Action and Alternatives would comply with these procedures, minimizing potential impacts. Impacts resulting from use of hazardous materials and generation of hazardous waste during construction would be less than significant when the Base waste management procedures were followed, as required independent of the project in this EA.

None of the WARB project site overlaps or would impact any Environmental Restoration Program (ERP) sites. The Travis and WARB sites are not located on or near any bulk fuel storage areas, and no impacts to bulk fuel storage areas are anticipated.

Therefore, the resources protected by these environmental programs would not be affected.

4.0 Environmental Consequences

4.1 No Action Alternative

Implementation of the No Action Alternative would not change any current environmental conditions or consequences from the 2011 baseline.

4.2 Water Resources

The Sequencing Alternatives merely change the order in which Phases or tasks within the Phases would be done. Changing the order would not change the resulting impacts on water resources.

4.2.1 Floodplains, Wetlands, Groundwater and Wastewater

The WARB project area is not in a floodplain, wetland resource or buffer zone.

The Proposed Action and Alternatives at WARB would not use groundwater or release water in a way that could impact groundwater. WARB requires concrete washout areas to be contained. See Sheet 16, Design 2011. Wastewater treatment facilities and sewer lines will not be affected by or constructed for the Proposed Action or alternatives.

4.2.2 Water Quality

Adapted from Travis EA 2009

Pollutants introduced to the drainage ditches near the construction area could result in significant impact to the water quality of nearby streams. Erosion during earth-moving activities would potentially cause short-term impacts to drainages and ultimately to Stony or Cooley Brook. The Base is covered under the EPA NPDES Multi-Sector General Permit that regulates stormwater associated with industrial activities. The Permit requires a stormwater pollution prevention plan.

The contractor would prepare a construction stormwater pollution prevention plan (SWPPP). An erosion control and restoration plan would be prepared to control short-term and long-term erosion and sedimentation. Best management practices (BMP) to control runoff and sedimentation required by the construction SWPPP and the erosion control and restoration plan would include regular and documented site inspections, the use of silt fences or other erosion controls, minimization of earth-moving activities during wet weather, and re-vegetation with appropriate native plant materials of disturbed areas. The project would comply with all applicable restrictions in the stormwater permit, the SWPPP, and the erosion control and restoration plan. Compliance with the permit and implementation of BMPs would reduce potential impacts to water quality resulting from construction sediment discharged during storm events to Stony and Cooley Brooks to less than significant levels.

4.2.3 Stormwater

Stormwater from Runway 15/33 would no longer flow into, through and out of the present drainage structures nearby. It would instead flow over 25' wide new paved shoulders, down slope over paved and grassy shoulders where most would infiltrate into the ground, and the remainder would enter other storm drains. The proposed condition would result in a net increase of approximately 2.9 Acres of impermeable surface. About 5.4 acres of new paved shoulders would be added but approximately 2.5 Acres of existing pavement at Apron J will be removed and seeded.

The water that runs off the pavement would irrigate the vegetation in areas nearby and could change its frequency of mowing to maintain the prescribed height of 7" – 14". The runoff will become cooler and cleaner before it joins the water table. That water will contribute to a more natural hydrologic condition both nearby and at down-gradient receiving waters. More water will be available to be returned to the atmosphere by the process of evapo-transpiration. Some of the infiltrated water may find its way to the pipes that presently drain the airfield. That is because all existing storm lines from 6" to 30" in diameter were constructed with 1" gaps between pipe sections.

Adapted from Travis EA 2009 paragraph 4.5.2.3 Stormwater

A hydrologic analysis (Analysis) was conducted to evaluate changes in stormwater runoff patterns (including runoff volumes and flow rates) and the hydrologic impact of land cover changes and changes in slope associated the project. Results of the Analysis are presented here and the Analysis is included in Appendix 4.

Outfall Points are shown on the map on page 7 referred to in Appendix 4. The flow at Outfall Point A is calculated to decrease from 19.09 cubic feet/second (cfs) to 5.73 cfs. The flow at Outfall Point F is calculated to decrease from 45.71 cfs to 28.58 cfs. Flow at Outfall Point J is calculated to decrease from 97.13 cfs to 72.63 cfs. These results translate to less unnatural flow of stormwater runoff (rate, amount, and volume) through drainage pipes after the project because more is being absorbed on site. The very slight increase in impervious surface does not result in an increase in the amount of stormwater runoff because it is offset by the stormwater bypassing the old drainage system and being allowed to infiltrate into the sandy soils of the unpaved shoulders. While the result is a net positive impact for storm water it is considered to be less than significant.

4.3 Biological Resources

No federal endangered or threatened species or their critical habitats are present on WARB. There are environmental issues associated with the Proposed Action and Alternatives concerning state-listed and migratory species often present throughout the project area. Implementation of this Proposed Action would result in permanent and temporary direct and indirect impacts to grassland birds that are known to occur within the area of the Proposed Action.

The birds that breed in the airfield grasslands at WARB are protected under the Migratory Bird Treaty Act and Massachusetts Endangered Species Act (MESA). Congress has not waived sovereign immunity to make federal agencies subject to state endangered species laws. WARB is required to coordinate with the Massachusetts Department of Fisheries and Wildlife and U.S. Fish and Wildlife Service on how natural resources are managed on the federal installation. Nesting habitat for these species occurs primarily in the red and green cross-hatched areas of Figure 8 in Appendix 1. Extracts from the Air Force's directive on managing natural resources, WARB's Integrated Natural Resources Management Plan, and grassland species' life histories are in Appendices 6-8 respectively.

Extensive grading and vehicle traffic could temporarily interfere with breeding by Upland Sandpipers, Grasshopper Sparrows, and Northern Harriers. The first are listed as endangered and the others are listed as threatened by the Massachusetts Division of Fisheries and Wildlife (MassWildlife) (MassWildlife 2011). Paving the shoulders would move the present weedy habitat immediately next to the runway that is now frequented by other birds.

ENDANGERED MIGRATORY BIRDS:

MIGRATORY GRASSLAND BIRDS INCLUDING THOSE LISTED BY MASSACHUSETTS AS ENDANGERED AND THREATENED AND OTHERS ARE PRESENT IN THE CONSTRUCTION AREA DURING THEIR BREEDING SEASON: 1 APRIL-31 JULY. THE CONTRACTOR WILL MINIMIZE LAND DISTURBANCE TO RETAIN VEGETATION AND THE NATURAL HABITATS OF THESE BIRDS. THE CONTRACTOR SHALL SUBMIT TO THE CONTRACTING OFFICER 21 DAYS PRIOR TO COMMENCING CONSTRUCTION ACTIVITY A "PLAN TO MINIMIZE HABITAT DISTURBANCE" FOR APPROVAL. IT WILL ADDRESS HOW ANY DRIVING, GRADING, STOCKPILING OR OTHER DISTURBANCES IN VEGETATED AREAS AND HABITAT WILL BE MINIMIZED. THE CONTRACTING OFFICER'S REPRESENTATIVE WILL CONSULT THE 439 MSG NATURAL RESOURCES MANAGER ON THE ADEQUACY OF THIS PLAN. THE CONTRACTOR SHALL SUBMIT REQUESTS FOR CHANGES OR EXCEPTIONS TO THIS PLAN TO THE CONTRACTING OFFICER FOR APPROVAL SEVEN WORKING DAYS PRIOR TO THE NEED.

Figure 6. Statement on Sheet 9 Erosion Controls, in project drawings

4.3.1 Proposed Action

Figure 6 shows a statement on Sheet 9 of 125 in the project drawings that relates to minimizing disturbance to habitat of rare, migratory, grassland birds.

4.3.1.1 Construction disturbance to grassland

For the purposes of this EA, permanent impacts are defined as impacts that result in the loss of habitat for 1 year or more, while temporary impacts result in the loss of habitat for less than 1 year.

4.3.1.1.1 Temporary disturbance

Sheet 37 of the project drawings show that the area to be graded extends an irregular distance from the runway (Design 2011). Temporary disturbance to grassland from grading is estimated to be 42 acres of area that is not now paved. "Laydown" or material storage areas are estimated to be 6-7 acres total for 2 areas at opposite ends of the runway. WARB will work with the contractor to utilize existing paved access routes to and from the construction site and to establish laydown areas on existing pavement as much as is practical.

Much of the new electrical system work will be in areas to be graded. An estimated 7 additional acres will be disturbed for the new electrical system for a new homerun duct from the runway circuit back to lighting vault at base of the airfield control tower. Disturbance to repair/install new drainage system is expected to be minimal because most of this project phase is inside of the area to be graded.

The total of 56 acres is 4.2% of the total approximately 1325 acres of grassland habitat at WARB. Temporary disturbance of that very small percentage is not a significant impact.

4.3.1.1.2 Permanent disturbance

Approximately 5.4 acres of shoulders next to the runway will be newly paved. Approximately 2.5 acres of new grassy area will result after Apron J is demolished and new access road is built in the middle of where the apron used to be. See Sheet 36 of the plan drawings for the location of Apron J (Design 2011). Thus about 2.9 acres net of grassy habitat will permanently be lost due to the project. Given that the total grassland area at WARB is approximately 1,325 acres, loss of this literally marginal habitat next to the runway is not a significant impact.

Shifting the Phase schedules to accomplish construction at different dates might benefit breeding of rare bird species without increasing BASH risk. No aircraft will fly on any of Runway 15/33 while construction is taking place on it. Therefore alternative schedules are evaluated here.

4.3.2 Alternative 1: Sequence work as Phase 1, Phase Pad 33, then Phase YG.

Experience and some research have shown somewhat higher numbers of grassland birds present in the area of YG than Pad 33 during the breeding season (Melvin 2001, Peters and Allen 2010, Peters and Allen 2011). This sequence could minimize construction disturbance until the end of the breeding season of the larger and perhaps second best rare bird breeding habitat along the runway. It is between Taxiways G and Y. Disturbance includes not only direct earth moving activities but also the associated presence of humans, vehicles passing, noise, dust, vibration, etc.

Assuming average rates of work a rough calendar for this sequence would be: Phase 1 mid March to mid April, Phase Pad 33 mid April to mid July, and Phase YG about mid July into the fall.

Adding incubation and nestling periods to nest initiation dates yields an estimated period of vulnerability for eggs and young birds. The dates are listed in Figure 7 by species, using nest initiation dates at WARB from Peters and Allen 2011, and initiation, incubation and nestling periods from Baicich and Harrison 1997, DeGraaf and Yamasaki 2001, and Maine IFW 2011. Information about the location and success/failure of Grasshopper Sparrow and Eastern Meadowlark nests at WARB comes from Peters and Allen 2011.

Species	Nest Initiation	Incubation	Nestling Period	Vulnerability Period
Upland Sandpiper	Late April–Early May	21	30	21 April- 1 July
Grasshopper Sparrow (2- 3 broods/year)	11 May- 20 July 50% by 10 Jun 80% by 1 July	11-12	9 fly 4-19 more	11 May- 20 August 50% 10 Jun- 10 July 80% 1 July- 1 August
Northern Harrier	Mid May	29-39	14-37	15 May- 1 August
Eastern Meadowlark	85% by 10 June 100% by 30 June	13-15	11-12	10 June- 7 July 30 June- 27 July
Bobolink	Mid-late May	10-13	10-14 can't fly*	15 May- 11 June*
Savannah Sparrow	11 May- 20 July 75% by 20 June 100% by 20 July	8-12	8-14	11 May- 7 August 75% by 16 July 100% by 15 August
Killdeer	3 April- 4 Jul	24-26	1, fly @ 40	3 April- 10 September
Horned Lark	Mid May- mid June	10-14	9-12 can't fly, fly @ 12-17	15 May- 15 June

Figure 7. Estimated vulnerability period for grassland bird eggs and nestlings at WARB, MA

Phase 1 must be completed first to make Runway 05/23 available as soon as possible. If it is completed as planned the construction disturbance there will be finished well before the nesting vulnerability period begins.

Phase Pad 33, if done mid April to mid July, would be in the nesting vulnerability period. No Grasshopper Sparrow nests were found there during the breeding seasons in 2009 and 2010 however. Only one Eastern Meadowlark nest, which failed, was found there in that period. Thus doing the project there during any proposed construction period would not have significant impacts on nesting birds.

Phase YG, if done about mid July into the fall, would be outside the vulnerability periods for Upland Sandpipers, 50% of Grasshopper Sparrows, 85% of Eastern Meadowlarks, Bobolinks, 75% of Savannah Sparrows, Horned Larks and some Killdeer. Northern Harriers are not known to nest in that area. Phase YG, if done immediately after Phase 1, would run from mid April to mid August. This would be inside the vulnerability periods for all bird species in Figure 7.

A total of 5 (2 successful and 3 failed) Grasshopper Sparrow nests were located in area YG in 2009 and 2010. A total of 26 Grasshopper Sparrow nests were located on WARB in 2009 and 2010. Thus, approximately 20% of Grasshopper Sparrow nests located on WARB were located in area YG. If 50% of Grasshopper Sparrows have finished breeding in the 20% of the nests in area YG then 10% of the total of Grasshopper Sparrows at WARB would be at risk from construction, and 40% of them would have failed due to other causes in a normal year. Thus

Alternative 1 could negatively impact 6 % of breeding by Grasshopper Sparrows at WARB, which would not have the potential to be a significant impact.

A total of 3 (2 successful and 1 failed) Eastern Meadowlark nests were located in area YG in 2009 and 2010. A total of 27 Eastern Meadowlark nests were located on WARB in 2009 and 2010. Thus approximately 11% of Eastern Meadowlark nests located on WARB were located in area YG (Peters and Allen 2011). If 85% of Eastern Meadowlarks have finished breeding in the 11% of the nests in area YG then less than 2% of the total Eastern Meadowlarks at WARB would be at risk from construction, and some of them would have failed due to other causes in a normal year. Thus Alternative 1 would not have significant impacts on Eastern Meadowlarks.

Alternative 1 would minimize the risk to breeding by grassland birds in area YG.

Alternative 1 poses a potential conflict if the Great New England Air Show is performed at WARB in August as presently scheduled. Aircraft assigned to and visiting WARB may need to be able to operate on airfield taxiways nearby. Conflicts could be minimized by ensuring that aircraft could get to Taxiway R via L, Y, F and Pad 19. That would depend upon work to rebuild F being completed before then, and work on Runway 15 approach end not interfering with aircraft taxiing between Y and F.

4.3.3 Alternative 2: Sequence grading for all Phases to be done outside the bird breeding timeframe.

Grading all of the shoulders at once could reduce impacts on rare birds if done outside their breeding seasons. It might also magnify the effects of dust and erosion. Any sequence would require stabilizing slopes of bare soil with newly seeded grass or calcium chloride or a 'tackifier', which is a bonding or adhesive agent; and robust water erosion and sedimentation controls. Stabilizing slopes and minimizing erosion and sedimentation are common best management practices in construction and will be required for this project. Changing the sequence of grading would therefore minimize impacts on breeding by grassland birds in all areas of the project. Alternative 2 would not have significant impacts on biological resources.

4.4 Cultural Resources

The former 37.5' wide shoulders of Runway 15/33 have been incorporated into the actual runway surface. It was repaved at least once, in 1980. Adding 25' paved shoulders onto a runway now twice as wide as it was originally (now 150') and re-grading graded grassy areas by a few percent of slope do not significantly impact what little is left of the runway's original character. Further, it was designed for long term use. That implies maintenance to keep it up to current safety and design standards.

The cultural resource of potential significance to this project is the runway itself. Impacts to that cultural resource from this project would be insignificant.

4.5 Relationships between Short Term Uses of the Property and Long Term Productivity

Adapted from Travis EA 2009

The purpose of the Proposed Action is to repair Runway 15/33 and associated airfield facilities. Repair of the airfield would reduce the potential safety hazards associated with deterioration of the existing runway. In addition, the airfield would comply with UFC 3-260-01 regulations for

airfield and lighting systems. Long-term productivity would be enhanced by implementing the Proposed Action because the frequency of maintenance, and the associated use of materials and resources, would be reduced.

4.6 Cumulative Impacts

Adapted from Travis EA 2009, 4.15.2 Cumulative Effects

Cumulative effects are defined in 40 CFR 1508.7 as “impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions.”

Runway or taxiway projects considered for cumulative impacts in this EA are those that were recently completed, ongoing projects, or projects planned to begin within the next 2 years.

Projects that are under consideration by WARB that would occur beyond 2 years are too uncertain to be evaluated. The following list (organized by year) includes recently completed or foreseeable future actions that could occur at WARB:

Fiscal Year 2010

Repair PCC Pavement
Repair Lights (Sequencer
Flasher)

Fiscal Year 2011

Repair Taxiway L
Repair Taxiway R
Repair Taxiway Y

Fiscal Year 2012

Repair Taxiway F
Potential increase in airfield mowing

The potential for cumulative impacts to air quality would be from multiple construction projects occurring simultaneously. Not all of the projects listed above would be constructed simultaneously. The various projects would conform to the SIP and not be regionally significant. After construction is complete, the Proposed Action would not contribute to long-term cumulative impacts to air quality because no increase in flight operations or traffic would occur.

Most of these projects occur in the footprint of land already developed. Construction of some of the shoulder paving projects could result in unavoidable, permanent impacts by paving small areas of grassland. These permanent impacts to biological resources would not be cumulatively significant.

A potential increase in airfield mowing as shown in Appendices 7 and 8 could disturb habitat during the grassland bird breeding season for the foreseeable future. That change, if required, will likely be the subject of its own environmental impact analysis process.

4.7 Irreversible and Irretrievable Commitment of Resources

Funds were previously committed to pay for the design of this runway project. The design is necessary to analyze the environmental impacts of the project. No other irreversible or irretrievable commitments of resources have occurred to implement the Proposed Action or Alternatives prior to this Environmental Assessment.

5.0 Findings and Conclusions

5.1 General

The resource areas that would not be impacted by the Proposed Action and Alternatives 1 and 2 are Air, Noise, Geological, Transportation, Land Use and Visual, Socioeconomic, Environmental Justice and Protection of Children, and other environmental programs: Safety and Occupational Health, Hazardous Materials, Wastes, Environmental Restoration Program Sites, and Stored Fuels, Underground Storage Tanks (UST), Lead-based Paint (LBP), Polychlorinated Biphenyls (PCB), and Asbestos.

5.2 No Action Alternative

Implementation of the No Action Alternative would not change current any environmental conditions or consequences from the 2011 baseline. However, it would cause safety problems because it would lead to further deterioration of runway pavements, continued heaving, storm water line or ponded water, leave the runway lights inoperable at unpredictable times, and preclude the pavements from properly shedding water. All of these issues would keep the runway and associated infrastructure from meeting DOD design and safety criteria.

5.3 Proposed Action

The Proposed Action would not have significant impacts on Water, Biological and Cultural Resources.

5.4 Alternative 1

Alternative 1 changes the order in which Phases would be done. Changing the order would not change the resulting (insignificant) impacts on Water or Cultural Resources. Alternative 1 would have a positive impact on Biological Resources by limiting disturbance to nesting, rare, grassland birds.

5.5 Alternative 2

Alternative 2 changes the order in which the task of grading the shoulders would be done. Instead of being done within each Phase the grading would be done before or after the grassland bird breeding season irrespective of the Phases. Changing the order of this task would not change the resulting impacts on Water or Cultural Resources. Alternative 2 would have a positive impact on Biological Resources by limiting disturbance to nesting, rare, grassland birds.

5.6 Combining the Proposed Action and Alternatives 1 and 2 with the Contractor's Plan

The Proposed Action could be combined with either or both of Alternatives 1 and 2 to reduce impacts on nesting grassland birds. The construction contractor would be required to produce a plan to minimize disturbance to these bird's habitat 21 days prior to beginning construction. That plan could incorporate either of both of these Alternatives.

5.7 Military Readiness Activity per the Migratory Bird Treaty Act

Projects such as this to repair or improve the runway, shoulders and other infrastructure could be deemed by WARB to be essential to military readiness and therefore, "military readiness activities" per the Migratory Bird Treaty Act (MBTA). Incidental, "takes" of migratory birds due to military readiness activities are exempt from MBTA enforcement provisions if those takes do not threaten the viability of the population of those birds (50 CFR 21.15) . The relatively small permanent changes (as in paving 25' of the shoulders while removing other pavement) and

larger temporary changes (grading the shoulders, and vehicle traffic) likely to occur because of this runway project will not impact the WARB population of the species. See Appendix 9 for further information on the military readiness exemption.

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Present WARB BASH Mowing Map. See Appendix 1

Proposed BASH Airfield Mowing Map w/AMA= 500'. See Appendix 3

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7.0 List of Preparers

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Please see EOD EA 2003, BRAC EA 2007 and Travis EA 2009 for lists of their preparers.

8.0 Appendices

Appendix 1 Present WARB BASH Mowing Map

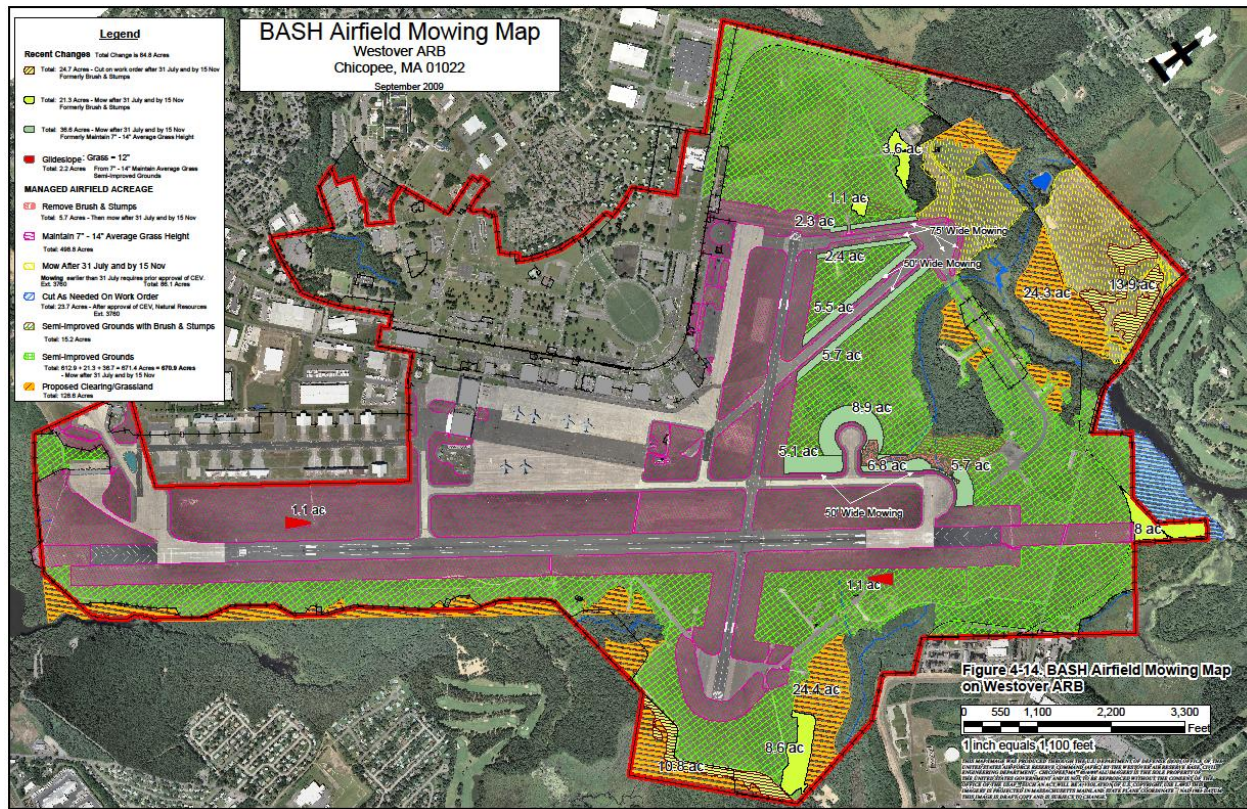


Figure 8. WARB BASH Mowing Map.

This map shows the present mowing regime at WARB. It is based upon the 2009 decision of the WARB Bird Hazard Working Group (BHWG) that delaying mowing until 31 July in green areas on the map would not pose unacceptable risk of bird or other wildlife strikes to aircraft. That decision was consistent with the BHWG's authority in AFI-91-202. See Appendix 2.

Appendix 2 Extract from AFI 91-202, The US Air Force Mishap Prevention Program, 5 August 2011

7.3.1.4.9. Grass Height. Mow aircraft movement area (AMA) to maintain a grass height between 7 and 14 inches. The AMA, as defined in UFC 3-260-01, *Airfield and Heliport Planning and Design*, is that area of the airfield encompassed by the Primary Surface and the Clear Zones, as well as apron areas and taxiways, regardless of their location. As a minimum, turf shall be maintained 500 feet outside the AMA boundary where able. Installations located in arid climates where growing grass is difficult may develop natural vegetation on the airfield to limit attractiveness to wildlife. These situations require comprehensive vegetation/wildlife hazard management and will be reviewed individually by HQ AFSC/SEFW for approval. Installation safety offices may request a grass height restriction waiver from HQ AFSC/SEFW after MAJCOM coordination.

Appendix 3 Proposed BASH Airfield Mowing Map w/AMA= 500'

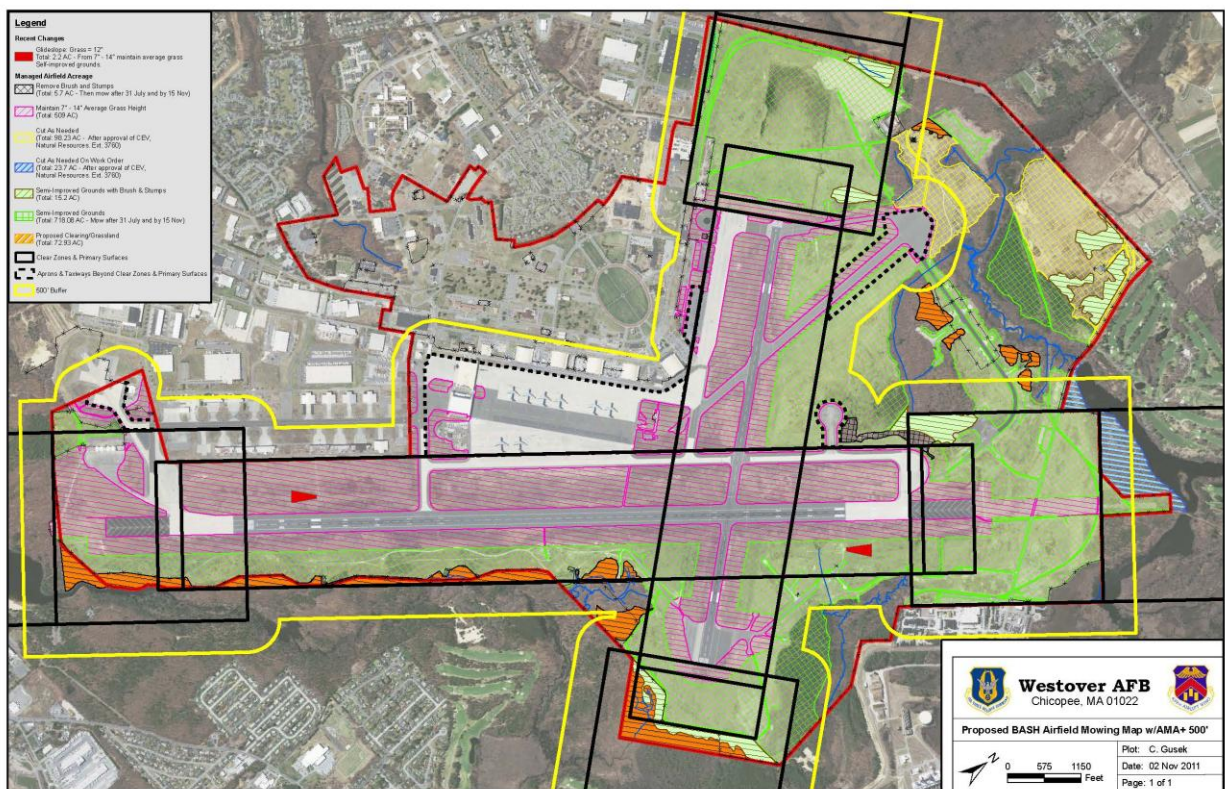


Figure 9. Proposed BASH Airfield Mowing Map w/AMA= 500'.

This map shows the areas within the yellow lines where the 5 Aug 2011 version of AFI 91-202 now requires airfield vegetation to be mowed to maintain heights between 7" and 14".

Appendix 4 Water Resources

1. Predevelopment and Post-development Hydrology Calculations

These results are on the hydraulic Computation sheets as shown on page 3 (for existing) and page 6 (for proposed). These points are shown on the area drainage map (page 7). Outfall Point A is the outfall of the 18" on north end, and volume in DMH # 10 & 13. Outfall Point F is the volume in DMH #38. Outfall Point J is the volume in 72' Pipe at the junction of the storm line from CB 77.

These nomenclatures can be found on the survey files in the latest set of plans.

OUTFALL POINT	EXISTING (CFS)	PROPOSED (CFS)	DIFFERENCE (CFS)
OUTFALL POINT A	19.09	5.73	13.36
OUTFALL POINT F	45.71	28.58	17.13
OUTFALL POINT J	97.13	72.63	24.50
TOTALS	161.93	106.94	54.99

Copies of the hydraulic computation sheets are available at www.westover.afrc.af.mil .

2. Expanded description extracted from EOD EA 2003

WATER RESOURCES

Water resources include the quantity and quality of surface and groundwater sources. The hydrologic cycle results in the transport of water into the air, the ground surface, and subsurface. Natural and human-induced factors determine the quality of water resources. Water resources discussed in this document include groundwater, surface water, floodplains, and water quality.

Groundwater

Groundwater in the project area is primarily contained in the shallow delta outwash plain aquifer that underlies Westover ARB. This unconfined aquifer lies above glaciolacustrine fine-grained sediments (i.e., silts and clays). Within Westover ARB, the shallow aquifer thickness is 25 to 85 feet, and is thinner (approximately 25-40 feet) near the project area (USAF, 1995c). The lacustrine deposits vary in thickness from 10 to 250 feet and are sometimes underlain by glacial till (0 to 20 feet thick) unconformably overlying Triassic bedrock. The Triassic bedrock comprises the uppermost confined aquifer (USAF, 1998a). Groundwater within the Triassic bedrock aquifer occurs mainly in joints and fractures. The water table within the unconfined shallow aquifer ranges from 5 to 20 feet in depth and is significantly influenced by topography....

(AGM 2011 note: In general, shallow groundwater flows are directed toward brooks where discharge as bank seepage contributes to the base flow of the brooks and to the maintenance of hydric conditions in adjoining wetlands.)

Very minor use is made of groundwater supplies at Westover ARB. The sediments could yield approximately 100 to 300 gallons per minute under normal pumping conditions (USMC, 2001). However, groundwater beneath the project area is not used for Westover ARB's drinking water.... A deeper confined aquifer, about 150 feet below the surface, is used by nearby residences as a source of drinking water. The closest groundwater wells (in the deeper aquifer) to the project area are located off-base... (USAF, 1998a). This aquifer is separated from the shallow aquifer by a 60-foot aquitard of low permeability clays.

Surface Water

Westover ARB has nine outfalls where storm water exits the base. The new Multi-Sector General Permit (MSGP) was issued by EPA in September of 2008 and became effective Jan. 5, 2009. In April 2009, Westover submitted an NOI for coverage under the 2008 MSGP for all outfalls. Westover ARB has developed a storm water monitoring plan (with visual assessment and chemical analysis) to satisfy the requirements of the EPA. Westover ARB is not required to meet numeric effluent limitations because such limitations are not contained in the MSGP for airport operations.

Figure 3.3-1 shows surface water features in the project area. Base flow to the Stony Brook system, a tributary to the Connecticut River in South Hadley, is from a variety of sources, including storm water runoff via Outfall 005 (USAF, 1997); overland flow; or sheet flow from wooded and filled areas. Base flow is contributed by infiltration of surface waters on gentle land slopes underlain by pervious soils derived principally from glacial outwash....Surface waters are not used for any industrial, domestic, or municipal purposes... (AGM 2011 note: the same generally holds true for Cooley Brook, which receives storm water runoff from the runway project area via Outfalls 6 and 7.)

Floodplains

The Federal Emergency Management Agency (FEMA) defines types of floodplains. The two relevant zone types at Westover ARB are "A" (areas subject to inundation by a 100- year flood, but no detailed hydraulic calculations have been performed by FEMA), and "AE" (areas subject to inundation by a 100-year flood as determined by detailed methods). The X500 zone boundary is subject to inundation by a 100- to 500-year flood. Flood zones on Westover ARB have not been determined because the area is not within the jurisdiction of either Chicopee or Ludlow. Therefore, Flood Insurance Rate Maps for the communities of Chicopee and Ludlow depict the area of Westover ARB as an "area not included in mapping" (ANI) zone. FEMA maps that illustrate Stony Brook show offbase floodplains associated with the brook as it enters and exits the base (USMC, 2001).

Water Quality

Historical surface water quality data for Westover ARB has been collected at storm water outlets. As noted in Section 3.3.2, Outfalls 001 and 002 were sampled as part of NPDES permit requirements. In 1992, a storm water report for Westover ARB (USAF, 1997) indicated that storm water outlet 005 in the Study Area held only storm discharges (i.e., was not transporting groundwater). However, later evaluations have found that groundwater is in fact a contributor to Outfall 005. During dry weather sampling, significant groundwater flow was noted in the storm

drainage system for Outfall 005 (USAF, 1997). The 1992 storm water study delineated those pollutants whose concentrations were likely to be in excess of 10 parts per billion (ppb) and should, therefore, be subject to quantitative sampling and analysis as required by 40 CFR 122.21 (g)(7)(iii)(B). These measurements included eight basic parameters for demand substances, nutrients, petroleum hydrocarbons, and pH, as well as a diagnostic list of inorganic cations and anions, and several organic chemical groups typically associated with storm water. Included in this listing is the determination of total lead, which is related to vehicular and aerosol fallout and to military activities involving small arms fire....

Protection of surface water quality from runoff at Westover ARB is implemented in part through the base's *Storm Water Pollution Prevention Plan* (SWPPP) and the *Erosion and Sedimentation Control Manual* (USAF, 1998d). These documents identify best management practices to minimize sedimentation impacts (such as runoff from a construction site) as well as chemical contamination of surface water.

Shallow groundwater samples obtained from installed wells and IRP site evaluations are considered representative of the groundwater flowing onto Westover ARB.... The water is characterized by very low total dissolved solids (TDS) and low specific conductance. Due to the dilution effects of infiltration, wells completed near the water table generally contain lower concentrations of major cations and anions than wells completed in the lower part of the aquifer. Iron and manganese are present in the groundwater entering the base in concentrations exceeding the maximum contaminant levels (MCL) for drinking water. However, this is likely a natural occurrence, since these elements are common in New England groundwaters derived from unconsolidated sand and gravel aquifers (USAF, 1995c). Surface water sampling of Stony Brook in conjunction with investigations of IRP sites LF-02 and LF-12 discovered no evidence of contamination (USAF, 1995c). Only manganese exceeded the secondary drinking water maximum contaminant level (MCL), and as noted above, this is likely due to natural factors.

Appendix 5 Resource Areas with No Significant Issues

The resource areas with no significant issues resulting from the Proposed Action or Alternatives are listed below, with a brief explanation for their omission from the analysis. As stated in 4.1 No Action Alternative, implementation of the No Action Alternative would not change current any environmental conditions or consequences from the 2011 baseline.

Air

The Environmental Protection Agency (EPA) has promulgated ambient air quality standards and regulations. The EPA has classified the Springfield area, including the area of the Proposed Action (Hampden County, MA) as in moderate non-attainment for the criteria pollutant ozone. Federal actions located in non-attainment areas are required to demonstrate compliance with the general conformity guidelines to regulate the emission levels resulting from the project.

The sequencing alternatives merely change the order in which Phases or tasks within the Phases would be done. Changing the order would not change the resulting impacts on air quality.

The data in table 4-3 of BRAC EA 2007 shows that the emissions associated with constructing and operating the new AFRC and associated facilities, when compared to the *de minimis* values for this moderate ozone non-attainment area, fall well below the *de minimis* values of 100 TPY for NO_x and 100 TPY for VOCs even under the initial conservative assumptions that were employed. As a result, that Proposed Action was not subject to the General Conformity Rule requirements.

BRAC EA 2007 also evaluated air emissions to determine regional significance. The 2002 *Massachusetts Supplement to the July 1998 Ozone Attainment State Implementation Plan Submittal* (MADEP, 2002) sets forth daily target levels which are less than the total amount of emissions allowed under the State Implementation Plan (SIP) for the region, of 86.7 tons per day of VOC and 226.36 tons per day of NO_x for the Massachusetts 8-Hour Ozone Non-Attainment Area, which includes Hampden County, MA. The increase in annual emissions from the Proposed Action in BRAC EA 2007 would not make up 10% or more of the available emissions inventory, and would therefore not be regionally significant. Air quality impacts were therefore considered to be not significant.

See also EOD EA 2003, paragraph 4.1 AIR RESOURCES, for further analyses and results for WARB.

Travis EA 2009 is relevant here for its analysis of the impacts of a large construction project to repair airfield pavement and lighting for a runway in Fairfield, California. That state has some of the strictest air quality rules in the U.S. and Massachusetts has referred to them in formulating its air rules.

Paragraph 4.2.3.1 of Travis EA 2009 deals with Construction Emissions Impacts.

The total duration of that more extensive project's demolition and construction would take approximately 18 months, with the majority of the construction occurring in 2010. The time estimate for the WARB runway project is approximately half that time. Construction emissions were expected to occur as a result of engine exhaust from the additional vehicle trips by

construction workers and off road construction equipment. These emissions would primarily consist of CO, nitrogen oxides (NO_x), PM₁₀, PM_{2.5}, SO₂, and volatile organic compounds (VOC). In addition, demolition, site preparation and grading, vehicle travel on unpaved roads, and the concrete batching plant operation would result in fugitive dust emissions.

The estimated worst-case annual construction emissions under the Travis Proposed Action are shown in Table 4-1 of that EA. Detailed construction emission calculations and assumptions are provided in Appendix B of that EA.

As at WARB, the Travis Proposed Action would cause temporary, short-term air quality impacts as a result of construction emissions. Construction-related impacts are expected to be local (i.e., confined to the construction site area) and limited to the duration of the construction activities. Project construction would implement the applicable fugitive dust control measures defined in the state air quality guideline. Therefore, potential air quality impacts during construction of the Travis Proposed Action would be less than significant.

Given the insignificant outcomes of air analyses for a large construction project here and a larger runway construction project in California, air quality impacts are considered not to be significant for this runway project at WARB.

Noise

Paragraph 4.3 of Travis EA 2007 describes noise impact criteria and discusses potential project-related noise impacts. Potential future noise impacts were determined by analyzing the anticipated changes in noise exposure attributable to construction-related activities for their runway project. As a Travis, no change in noise levels is anticipated above existing levels after construction.

The fundamental measure of sound levels is expressed in decibels using a logarithmic scale. Noise is generally defined as sound that is undesirable if it is intense enough to damage hearing, it interferes with speech communication and sleep, or it is annoying.

Typical construction-related noise is expressed in terms of schedule, equipment used, and types of activities. The noise level would vary during the construction period, depending on the type of construction activity. Noise levels associated with trucks, backhoes, concrete mixers, jackhammers, rock drills, and pneumatic tools range from 85 to 98 dB 50 feet from the source. Depending on the source and the types of activities, noise associated with construction activities would be temporary, ordinarily occur only during daytime hours, and vary in levels. Noise associated with flightline activities at Travis is approximately 80 to 85 dB CNEL. Noise associated with flightline activities at WARB is at those levels or less (WARB 1996).

Also as at Travis, at WARB there are no sensitive receptors, such as residences or schools, within 1,000 feet of the site. The noise from construction of both of the runway repair projects would be temporary. Because construction noise would be temporary and sensitive receptors would not be affected, noise impacts resulting from implementing the Proposed Action would be less than significant.

Hazardous Materials, Wastes, Environmental Restoration Program Sites, and Stored Fuels

Paragraph 4.4 of Travis EA 2009 discusses these topics.

Congress passed the Resource Conservation and Recovery Act (RCRA) in 1976 to protect human health and the environment from the mishandling of solid and hazardous waste and to encourage the conservation of natural resources. Regulations adopted by EPA in 40 CFR 260 to 279 implement the RCRA. Both WARB and Travis AFB implement procedures in directives and specific plans for properly handling hazardous materials and managing and disposing of hazardous wastes.

The Proposed Action and Alternatives would comply with these procedures. Compliance with waste management procedures would minimize potential impacts. The Travis and WARB sites are not located on or near any bulk fuel storage areas, and no impacts to bulk fuel storage areas are anticipated.

Operation of the runway would not involve any activities that would increase the use of hazardous materials or the generation of hazardous waste. Hazardous materials, such as fuels and paints, would be used during repair of the runway and installation of new infrastructure at the runway. Construction could generate some hazardous wastes, such as empty containers and rags. All hazardous materials will be handled in accordance with the respective base's written plan, which includes protocols for storing, labeling and disposing of hazardous materials.

Impacts resulting from use of hazardous materials and generation of hazardous waste during construction would be less than significant when the Base waste management procedures were followed, as required independent of the project in this EA.

None of the WARB project site overlaps or would impact any Environmental Restoration Program (ERP) sites. ERP sites contain pollution from prior activities. If contaminated materials are encountered unexpectedly during construction, standard protective measures would be implemented and potential impacts to human health and the environment from the existing contamination would be less than significant.

Appendix 6 Extracts from AFI 32-7064, Integrated Natural Resources Management

(INRMP) 2.9.2. Biodiversity Conservation. Biodiversity conservation is an integral part of ecosystem management. Maintain or reestablish viable populations of all native species on AF-controlled lands when practical and consistent with the military mission.

(INRMP) 6.1. Wildlife Management Programs on Air Force Lands. The INRMP will address the management of game and non-game fish and wildlife on AF installations. The INRMP will be prepared in cooperation with the USFWS, NOAA Fisheries (for installations that include or are adjacent to marine environments), and the appropriate state fish and wildlife agency. The resulting plan will reflect the mutual agreement of the installation and the cooperating agencies for the conservation, protection, and management of wildlife resources (see 2.3.).

(INRMP) 6.5. Protection of Migratory Birds. The Department of Defense participates in the Federal Partners- in-Flight Program for the conservation of neotropical migratory birds. To the extent permitted by law, and subject to budgetary limits and mission constraints, the AF will make lands and resources accessible for furtherance of the Federal Partners-in-Flight program, and provide technical expertise for planning and implementing the program. In accordance with the Migratory Bird Treaty Act and Executive Order No. 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, January 10, 2001, avoid or minimize the negative impact of AF actions on migratory birds, and take active steps to protect birds and restore or enhance their habitat whenever possible. This includes preventing or abating pollution or detrimental alteration of the environment, as practicable, and incorporating migratory bird conservation into agency planning processes whenever possible. Notify the USFWS if unintentional take of migratory birds, reasonably attributable to AF actions, is having, or is likely to have a measurable negative effect on migratory bird populations, and implement conservation measures as specified in E.O. 13186, Section 3(e)(9).

(INRMP) 6.6. Wildlife Damage Control.

6.6.2. Migratory Birds.

6.6.2.1. Incidental Takes During Military Readiness Activity. In accordance with the 2003 National Defense Authorization Act (P.L. 107-314), Migratory Bird Treaty Act requirements indicated in Title 16, United States Code, Section 703 shall not apply to the incidental taking of a migratory bird by a member of the Armed Forces during a military readiness activity. Incidental takes during military readiness activities must conform to the rules and limitations in forthcoming regulations for P.L. 107-314. Seek legal advice if uncertain whether an activity qualifies as a military readiness activity.

(INRMP) 7.1. Endangered Species Act Compliance. The Endangered Species Act (ESA), (Title 16 United States Code, Sections 1531-1544), requires protection and conservation of federally listed threatened and endangered (T/E) plants and animals and their habitats. Conservation includes the use of all methods and procedures which are necessary to bring any T/E species to the point where the measures pursuant to the ESA are no longer necessary.

7.1.1. Federally Listed Species. Installations known to sustain federally listed T/E species or their habitats must address T/E species conservation in the INRMP. The INRMP goals and objectives must provide an overall ecosystem management strategy for the protection and

recovery of T/E species. When practical, provide similar protection to plants and animals that are candidate species for protection by federal listing.

7.1.2. State Listed Species. INRMPs will provide for the protection and conservation of state listed protected species when practicable. Although not required by the Endangered Species Act, provide similar conservation measures for species protected by state law when such protection is not in direct conflict with the military mission. When conflicts occur, consult with the appropriate state authority to determine if any conservation measures can be feasibly implemented to mitigate impacts.

The following information on Upland Sandpipers and Grasshopper Sparrows is excerpted from the WARB Integrated Natural Resources Management Plan (INRMP), signed in 2009.

(INRMP) 3.2.14 Threatened and Endangered Species.....

Upland Sandpiper. The upland sandpiper (*Bartramia longicauda*), state-listed as endangered, is a slender, moderate-sized shorebird with a small head; large, “shoe-button” eyes; short and thick dark brown bill long; thin neck; long, yellowish legs; and a relatively long tail (Carter 1994).

In Massachusetts, the upland sandpiper inhabits open expanses of grassy fields, hay fields, and mown grassy strips adjacent to runways and taxiways of airports and military bases (MNHESP 1995). The upland sandpiper migrates from its wintering habitat in South America during mid-April to early May to breed in Massachusetts. It breeds across North America from Maine to central Canada and Alaska, and from Maryland to Oklahoma and Colorado (Carter 1994).

Nests are well-concealed, grass-lined depressions on the ground. Clutch size consists of four cinnamon to pale olive or greenish-white eggs spotted with brown. Both sexes incubate the eggs for a period of 21 to 28 days. Young birds reach full size, develop adult plumage, and are fledged 32 to 34 days after hatching. European settlement created extensive nesting habitat through the clearing of forests for agricultural and grazing purposes.

The species has been state-listed in Massachusetts because of its rarity, declining population, and the continuing loss of open grassland habitat due to urban development and the natural succession of open lands to forests. Although it is increasing in the USFWS Mountain-Prairie Region 6 the upland sandpiper is currently experiencing population decline in the USFWS Northeast Region 5 of the United States (Sauer, Hines & Fallon 2005).

Optimum habitat for the upland sandpiper consists of separate areas of short and tall vegetation. Grassland areas utilized by the upland sandpiper consist of grasshoppers, crickets, weevils, billbugs, wireworms, beetles, grubs, flies, ants, spiders, snails, and various other insects. In addition, waste grain and seeds of foxtail grass, sandspurs, and button weeds are also consumed (Terres 1980). Tall grass regions are used by the upland sandpiper for nesting. Nests are built in sparse vegetation approximately 4 to 12 inches tall (MAS undated). Nests consist of grass lined depressions in the ground approximately 3 inches wide. The tall grass region provides cover and concealment for the nests. Following the breeding season, the upland sandpipers gather into flocks before departing to their wintering grounds in South America.

Grasshopper Sparrow. The grasshopper sparrow (*Ammodramus savannarum*), State-listed as threatened, is a small- to medium-sized grassland sparrow, with a narrow, short tail. Adult birds have an un-streaked or faintly streaked, buff-colored throat and breast; brown to reddish upper parts with intervening gray coloration; a pale, cream-colored strip flanked by lateral, dark brown strips on the head; and a yellowish area extending from the bill to below the eye. Grasshopper sparrows appear to be rather flat-headed, with large bills (Rising 1996).

It inhabits sand plain grasslands, pastures, hayfields, and airfields. The grasshopper sparrow is one of the most widespread species of sparrows with populations in North, Central, and South America. Nests are well-concealed, and consist of a cup of grass lined with fine grass and sometimes hair. Clutch size consists of three to six eggs that are white with a slight green or brown tinge and reddish or brown spots. The female alone incubates for a period of 11 to 12 days, and young leave during the next 9 days after hatching (Rising 1996).

The grasshopper sparrow has been listed as threatened in Massachusetts due to declining populations resulting from the loss of grassland habitat within the state (MNHESP 1995).

(INRMP) 4.2 Fish and Wildlife Management.....

Several incidences of bird-aircraft strikes have been reported at the Base. The 439 AW maintains bird strike reports which include the date and time of each strike, conditions, aircraft model, number of birds, bird species, and altitude and location at the time of the strike. The Westover ARB BASH Plan (WARB 2004) provides a local program for minimizing bird strikes to aircraft by (1) providing guidelines for the Base's BHWG, (2) providing procedures for reporting hazardous bird activity and altering or discontinuing flying operations, (3) providing procedures to disseminate information to all assigned and transient aircrews for specific bird hazards and procedures for avoidance, (4) providing procedures to eliminate or reduce environmental conditions that attract birds to the airfield, and (5) providing procedures to disperse birds on the airfield. The plan includes maintenance specifications for grass mowing between 7 to 14 inches on certain areas of the airfield; seasonal inspection requirements for grain type grasses that attract high-threat avian species; and periodic inspection requirements for ponding and proper drainage on the airfield whenever possible to reduce insect breeding, a major food source for birds during much of the year. The BASH Plan also established an educational program to acquaint crew members with the hazards associated with birds. In addition, Westover ARB has established a cooperative agreement and contracts the USDA, WS, formerly USDA, Animal Damage Control, to regularly monitor and reduce wildlife hazards to aircraft occurring on the Base. BASH reduction techniques currently employed by the Base and USDA, WS, include abating nuisance avian species with pyrotechnics and depredation when necessary.

(INRMP) Table 4-6

Wildlife Habitats on Westover ARB

Habitat Cover Type	Representative Species	Habitat Acreage: 1,611.3
Grasslands	Upland sandpiper, grasshopper sparrow, bobolink, horned lark, eastern meadowlark, savannah sparrow, American kestrel, small animals	

(INRMP) Table 4-7

Species-Specific Information for the BASH Program (continued)

Sandpipers/Shorebirds

The most significant hazard from these birds occurs when large numbers flock in tight groups, particularly during migration and along coastlines. Many of the upland species such as upland sandpipers and buff-breasted sandpipers might nest on airfields in spring and early summer. Other species such as killdeer are quite adept at avoiding aircraft and do not pose a significant hazard. Flocks in coastal areas can be hazardous and should be avoided. To control these birds, proper grass-height management must be observed. Water in puddles should be eliminated and ditch banks steepened to limit access to these birds. Pyrotechnics can be used for all species and some respond well to bio-acoustics.

(INRMP) 4.4.2 HM-2: Grounds Maintenance Activities and Construction Impacts to Sensitive Species

Concern: Sensitive species and their habitats could be impacted as a result of grounds maintenance activities or on-Base construction (e.g., sensitive grassland bird species' nest sites might be impacted by mowing activities).

Objective: Airfield mowing is required by and conducted according to USAF safety directives. Airfield mowing is essential to safe flying, which is essential to the USAF mission. The USAF has determined that airfield mowing is a military readiness activity under Section 315 of the FY03 National Defense Authorization Act, P.L. 107-772. This section exempts military readiness activities from the "incidental take" provisions of the Migratory Bird Treaty Act, (16 USC 701, et seq.). Incidental take includes unintended harm to birds and their eggs. The airfield mowing regime should be fully implemented during the 2005 growing season (see Section 4.7). This regime is intended to (1) protect sensitive grassland bird species' nest sites, (2) deter these species from foraging near the runway, and (3) attract these species to areas away from the runway. Alteration of this mowing regime should be reviewed by the MNHESP for their concurrence. Also, the BASH team should review any significant habitat alteration to ensure that it does not impact the safety of the flying mission. Finally, a grounds maintenance plan should be prepared that incorporates the threatened and endangered species management and BASH reduction strategies (also, see Topic No. GM-1).

Prescribed fire can be a useful component of grassland ecology and the ecology of grassland birds. Fire can assist in the generation of diverse habitat for grassland birds by creating a continuous availability of different age structures within a grassland, promoting habitat and species diversity. To minimize impacts on grassland species, only a portion of grassland habitat should be burned in each given year. It is recommended that no more than 20 to 30 percent of grassland habitat be burned annually for bird species that prefer recently burned grasslands. This allows grassland species to move to suitable habitat and later recolonize the burned habitat once it has regenerated (Vernegaard et al. 1998). An intensive burning regime instituted every spring for several years in combination with August mowing will help eliminate woody vegetation and

promote the return of native species. Once the growth of shrubby vegetation is controlled, a light burning regime can be instituted periodically every 2 to 6 years to continue to promote the growth of native grasses (MAS undated) (also, see Topic No. GM-2).

Actions:

1. Areas known to support these species should not be disturbed from April 1st to July 31st by any construction or earth-moving activities unless they are military readiness activities as determined by the Air Force. Continue to implement the airfield mowing regime during the growing season as specified in this INRMP (see Section 4.7). Alteration of this mowing regime should be reviewed by the MNHESP for their concurrence. The BASH team should review any significant habitat alteration to ensure that it does not impact the safety of the flying mission. A grounds maintenance plan should be prepared that incorporates the threatened and endangered species management and BASH-reduction strategies (also, see Topic No. GM-1).
2. Plan and seek funding for prescribed fire in grasslands.

Monitoring Criteria: Maintenance activities should be continually assessed during implementation, and modified as necessary, if they adversely affect sensitive species or result in the attraction of high BASH-threat species.

Addendum to

Westover Air Reserve Base, MA (WARB) September 2005 Integrated Natural Resources Management Plan (INRMP), August 2009

Throughout: Replace the “September 2005” date of the INRMP with “August 2009”.

(INRMP) 4.4.2 HM-2

Concern. Add the following on line 3 after, “activities).”

The Massachusetts Division of Fisheries and Wildlife (MassWildlife) has for some years expressed concern regarding the impact of, and need for, aspects of the airfield mowing addressed in paragraph 4.4.2 of this INRMP. WARB mows slightly less than half of the airfield grassland acreage during the bird breeding season to comply with Air Force safety directives (Air Force Instruction 91-202 AF MISHAP PREVENTION PROGRAM and Air Force Pamphlet 91-212 BIRD/WILDLIFE AIRCRAFT STRIKE HAZARD (BASH) MANAGEMENT TECHNIQUES). MassWildlife acknowledges aircraft flight safety as a paramount concern but questions the scientific basis for, and efficacy of, the current extent of mowing between 1 May and 31 July to reduce the Bird/Wildlife Aircraft Strike Hazard (BASH). The safety directives require that airfield vegetation be maintained between 7” and 14”. MassWildlife’s concern is that mowing large portions of the airfield that are greater than 50 feet from runways and taxiways during the grassland bird breeding season negatively impacts state-listed rare grassland without increasing aircraft safety. MassWildlife cannot endorse management actions that it believes would result in a substantial “take” of the largest breeding concentration of Upland Sandpipers and Grasshopper Sparrows in Massachusetts (and New England) unless authorized under a Conservation Permit issued pursuant to the MA Endangered Species Act (MESA). To address this situation, WARB is prepared, to the extent funds are available for these purposes, to undertake additional actions in the INRMP. See **Actions** below.

Actions. Add the following after, “grasslands.” in Action 2:

3. WARB has assisted Dr. Kimberly Peters of NJ Audubon Society to receive a DOD grant to study productivity of Grasshopper Sparrows and other grassland birds in mowed and unmowed areas here. MassWildlife is providing additional funding and is collaborating with NJ Audubon and Westover ARB to develop appropriate study designs so that this research can also investigate effects of mowing on Upland Sandpiper reproductive success and distribution on the airfield. Objectives of this research will include assessing effects of current mowing practices on Grasshopper Sparrow and Upland Sandpiper reproductive success and predicting how changes in timing or extent of mowing might modify those effects.

4. WARB will delay mowing until 1 August on 42 acres of grassland to improve the opportunity for bird breeding success without increasing risks to aircraft. The 42 acres are located along 3 taxiways and the Compass Rose, as shown on the map, attached. These areas are contiguous to existing grasslands where birds are found. The 439th Airlift Wing Commander will retain the unilateral right to deviate from these proposed changes to the mowing plan if the Commander determines they are not in the best interest of WARB, the Air Force, or if mission needs dictate that deviation. WARB has written guidelines to monitor the 42 acres to ensure that delayed mowing does not compromise aircraft safety and that the Commander receives objective information. The guidelines are attached.

5. WARB intends to continue working toward adding productive grassland habitat.

a. Eighty-four acres of brush have been cut, maintaining the openness of the existing grassland habitat. Of those, WARB has cleared trees from approximately 67 acres contiguous to grasslands since 2003. Twenty of those acres have been stumped, harrowed, compacted and planted with Little Bluestem grass seed, and will continue to be mowed annually. They are well on the way to becoming productive breeding areas for grassland birds. The remaining 47 acres are brushy but will be mowed in 2009 and annually thereafter in order to convert them to grassland. Stumps have been removed from 17 additional acres of brush that had been logged before 2002 and that area will be mowed in 2009 and annually thereafter to begin the transition to grassland.

b. WARB plans to remove the trees from and begin the conversion to grassland of 45-50 upland acres of 2 pine plantations contiguous to existing grasslands. The acres are estimated because 5 or less contiguous acres in one plantation are planned for use as a practice area for heavy equipment operators. Twenty-five acres have been cruised and estimated in preparation for harvest. MassWildlife professionals have recently visited these sites and offered suggestions for their conversion to grassland. The conversion may be slower than originally anticipated because the area may be significant archeologically. WARB may not be able to disturb the soil to pull stumps and expose mineral soil.

6. WARB will continue to facilitate and support field research into the impacts of mowing on the abundance and distribution of birds and efficacy of mowing to reduce

BASH at WARB. Mr. Milroy, the current Natural Resources Manager, completed a M.S. Thesis at the University of Massachusetts –Amherst on this topic in 2007, in collaboration with MassWildlife. NJ Audubon has funding to complete a field season in spring 2009, yielding a total of 2 years of data in a similar study using different methods. This is part of a larger study including Naval Air Engineering Station Lakehurst, NJ and Naval Air Station Patuxent River, MD.

7. WARB intends to continue to assist and participate in a DOD and USFWS working group that is examining airfield management, including mowing, and its impact on migratory birds and BASH. Mr. Milroy brought the issue to the attention of high level DOD and service branch natural resources officials, who started the working group. WARB will examine the results of the thesis, the NJ Audubon study, and possibly another investigation in South Carolina to determine how best to apply the results of these studies to vegetation management at WARB. It is hoped that the research will inform the Air Force policy on such mowing. Both WARB and MassWildlife acknowledge that the inter-related issues of vegetation management, impacts on rare grassland birds, and BASH will need to be re-visited during the next revision of the INRMP.

8. WARB offers to MassWildlife the opportunity to harvest native grassland seed to help it to create or restore grasslands off of WARB. WARB could thus help to establish approximately 500 acres of grassland nearby in Southwick MA and Suffield CT with these local ecotype seeds. This could minimize the potential negative impacts on grassland birds here from the mowing mandated by the Air Force.

Appendix 8 Extracts from Various Sources on the Life Histories of Species Discussed in this EA

Upland Sandpiper (*Bartramia longicauda*, State Endangered) The Upland Sandpiper returns to its breeding habit in Massachusetts mid-April to early May. (MassWildlife 2008).

-Species Description

The Upland Sandpiper is a slender, moderate-sized shorebird with small head and large, shoe-button eyes. It has a short, thick, dark-brown bill, a long, thin neck, and a relatively long tail. Its legs are yellowish. It stands about 12 inches tall and has a wingspan of 25-27 inches. The crown is dark brown with a pale buff crown stripe. The rump, upper tail and wings are much darker than the rest of the bird.

-Distribution and Abundance

There have been 14 occurrences of breeding-season Upland Sandpiper documented in Massachusetts since 1980 (NHESP database, accessed December, 2004).

-Habitat Description

The Upland Sandpiper inhabits large expanses of open grassy uplands, wet meadows, old fields and pastures. In Massachusetts, it is restricted to open expanses of grassy fields and hay fields, and to the mown grassy strips adjacent to runways and taxiways of airports and military bases.

-Threats

European settlement created extensive nesting habitat through the clearing of the forest for agriculture and grazing. The Upland Sandpiper was common in the 1850s, and at that time was seen in the thousands. Commercial shooting for food reduced its numbers dramatically. Currently, after having been protected from hunting for over 60 years, it is threatened by loss of habitat to development and succession of open lands to forest. The Upland Sandpiper is experiencing a population decline over much of its range, particularly in the Midwest and eastern United States.

-Reference

Massachusetts Natural Heritage & Endangered Species Program. 1986. Upland Sandpiper (*Bartramia longicauda*) Fact Sheet. (MassWildlife undated)

Grasshopper Sparrow (*Ammodramus savannarum*, State Threatened)

-Species Description

The Grasshopper Sparrow is a small sparrow of open fields. It is 4.5-5.5 inches long, has a flat head which slopes directly into the bill, and has a short, narrow tail. Each feather of the tail tapers to a point, giving it a ragged appearance. The upperparts have reddish streaks which contrast with the intervening gray. The dark brown crown is divided by a thin cream-colored center stripe. A yellowish spot extends from the bill in front of and below the eye. The sexes are similar. The typical song, often mistaken for the song of a grasshopper, consists of two chip

notes followed by *tsk tsick tsurrrrr*. Breeding birds also sing a complicated song with many squeaky and buzzy notes intermixed in a long phrase.

-Distribution and Abundance

There have been 32 occurrences of breeding-season Grasshopper Sparrow documented in Massachusetts since 1980 (NHESP database, accessed December, 2004).

-Habitat Description

The Grasshopper Sparrow is found in sandplain grasslands, pastures, hayfields and airfields characterized by clumping grass species (rather than sod-forming grasses). It is also found on open knolls, on sandplains within pine barrens, and in coastal heathlands. It requires a patchy grassland habitat with bare ground and bunch grasses such as poverty grass (*Danthonia spicata*), bluestem (*Andropogon* spp.) and fescue (*Festuca* spp). Preferred habitat is characterized by relatively low stem densities and limited accumulation of ground litter. This species is generally absent from fields with over 35% cover in shrubs. Bare ground is especially important, as Grasshopper Sparrows behave much like field mice in their habit of running along the ground to escape predators and to forage for invertebrates.

-Threats

Loss of appropriate habitat to land development, changes in agricultural practices (early harvesting and fewer fallow fields), and natural succession appear to be the primary factors in this species' decline. Openings created by forest fires once provided habitat, but these are now rare.

-Reference

Massachusetts Natural Heritage & Endangered Species Program. 1986. Grasshopper Sparrow (*Ammodramus savannarum*) Fact Sheet. (MassWildlife undated)

The breeding season of Northern Harriers is March to July in Massachusetts (MassWildlife 2010). While present on WARB they have not been observed to nest near Runway 15/33.

Grammia Phyllira Tiger Moths are listed as endangered by the state (MassWildlife 2011).

-Species Description

The Phyllira Tiger Moth (family Arctiidae) has a pinkish-peach colored thorax, striped with black, and a crimson abdomen with a broad black stripe dorsally and black spots laterally. Forewings black with broad pinkish-peach stripes, alternating with narrow stripes of the same color in form *oithona*. Hind wings bright crimson with black blotches along hind margin. Wingspan 35-40 mm. The Oithona Tiger Moth, formerly thought to be a separate species (*Grammia oithona*), has recently been demonstrated to be a form of the Phyllira Tiger Moth.

-Distribution and Abundance

There has been one occurrence of Phyllira Tiger Moth documented in Massachusetts since 1980 (NHESP database, accessed December, 2004). Historically, this species was more widespread in the Connecticut River Valley and also occurred on Nantucket.

-Habitat Description

The Phyllira Tiger Moth is a prairie species that inhabits xeric sandplain grasslands in the northeastern U.S. Larvae are polyphagous on low-growing herbaceous plants.

-Threats

- Loss and degradation of habitat (sandplain grasslands) due to development and suppression of fire and other natural disturbance regimes.
- Spraying with insecticides.

-Reference

Massachusetts Natural Heritage & Endangered Species Program. In prep. Phyllira Tiger Moth (*Grammia phyllira*) Fact Sheet. (MassWildlife undated)

The Phyllira tiger moth is a grassland species occurring in open, grassy areas including sand prairies, savannas, and pine barrens (NatureServe 2005). In New Hampshire, *Grammia phyllira* utilizes extensive areas of sandy soils associated with pine barrens or old fields (VanLuven 1994). This species is a generalist, with forbs, and presumably grasses, being the primary host plants (NatureServe2005, Wagner personal communication). The flight period of the *G. phyllira* is April to early October (Colvell 1984). Their habitat is extensive areas of sandy soil, generally supporting barrens or disturbed old field type vegetation (NatureServe 2011).

Frosted Elfin (*Callophrys irus*, State Special Concern)

-Species Description

The Frosted Elfin is a small lycaenid butterfly. All four wings are brown both above and below; underside of hind wing dark brown in basal area, light brown overlaid with whitish-gray scaling along outer margin, with irregular, dark line and dark spot at outer angle. Male with dark brown scent patch on upper side of forewing at costal margin. Wingspan 22-35 mm. Larva the typical slug-like lycaenid form, pale green with white lateral line and pale, oblique dorsolateral dashes; setae short and dense.

-Distribution and Abundance

There have been ten occurrences of the Frosted Elfin documented in Massachusetts since 1980 (NHESP database, accessed December, 2004). **Habitat Description**

Xeric and open, disturbance-dependent habitats on sandy (occasionally rocky) soil, including grassy openings in pitch pine/scrub oak barrens and similar anthropogenic habitats such as power line cuts, railways, old sand/gravel pits, and airports. Adult nectar sources include lupine (*Lupinus perennis*), cherries (*Prunus* spp.), blackberries (*Rubus* spp.), and blueberries (*Vaccinium* spp.). Larvae feed on lupine (*Lupinus perennis*) or wild indigo (*Baptisia tinctoria*).

-Threats

- Loss and degradation of habitat (especially pitch pine/scrub oak barrens) due to development and succession. This species' habitat requirements are often for open, fire-dependent habitats, so fire suppression contributes to habitat loss.
- Decline of lupine (*Lupinus perennis*).
- Pesticide spraying.
- In areas overpopulated with deer, excessive grazing of larval host plants.

-Reference

Massachusetts Natural Heritage & Endangered Species Program. In prep. Frosted Elfin (*Callophrys irus*) Fact Sheet.
(MassWildlife undated)

Appendix 9 Military Readiness Exemption from Incidental “Take” under the Migratory Bird Treaty Act

50 CFR Sec. 21.15 Authorization of take incidental to military readiness activities.

(a) Take authorization and monitoring. (1) Except to the extent authorization is withdrawn or suspended pursuant to paragraph (b) of this section, the Armed Forces may take migratory birds incidental to military readiness activities provided that, for those ongoing or proposed activities that the Armed Forces determine may result in a significant adverse effect on a population of a migratory bird species, the Armed Forces must confer and cooperate with the Service to develop and implement appropriate conservation measures to minimize or mitigate such significant adverse effects.

Extracts from **Federal Register** /Vol. 72, No. 39 /Wednesday, February 28, 2007 /Rules and Regulations, Section 315 of the 2003 National Defense Authorization Act (Pub. L. 107– 314, 116 Stat. 2458, Dec. 2, 2002, *reprinted in* 16 U.S.C. 703 note) (hereinafter “Authorization Act”) requires the Secretary of Defense, in consultation with the Secretary, to identify ways to minimize, mitigate, and monitor take of migratory birds during military readiness activities and requires the Secretary to prescribe, with the concurrence of the Secretary of Defense, a regulation that exempts military readiness activities from the MBTA’s prohibitions against take of migratory birds. With the passage of the Authorization Act, Congress clearly expressed its intention that the Armed Forces give appropriate consideration to the protection of migratory birds when planning and executing military readiness activities, but not at the expense of diminishing the effectiveness of such activities. Any diminishment in effectiveness could impair the ability of the Armed Forces to fulfill their national security mission. Diminishment could occur when military training or testing is modified in ways that do not allow the full range of training methods to be explored. This rule authorizes the Armed Forces to take migratory birds incidental to military readiness activities, subject to certain limitations and subject to withdrawal of the authorization to ensure consistency with the provisions of the migratory bird treaties...

Appendix 10 Comments and Responses on EA and Draft FONSI

Massachusetts Division of Fisheries and Wildlife submitted comments in a letter dated November 30, 2011. WARB responded in a letter dated 12 December 2011. The letters are included below.



MassWildlife

Wayne F. MacCallum, *Director*

Division of Fisheries & Wildlife

Lt. Col. James Bishop
439 AW/PA
100 Lloyd Street
Westover ARB
Chicopee, MA 01022-1825

November 30, 2011

<i>Project Name:</i>	<i>Grade and Pave Shoulders on Runway 15/33</i>
<i>Location:</i>	<i>Westover Air Reserve Base, Chicopee, MA</i>
<i>Document Reviewed:</i>	<i>Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI)</i>
<i>Project Description:</i>	<i>grade and pave shoulder on Runway 15/33, repair pavement, improve drainage structures, replace lighting</i>
<i>NHESP Tracking No.</i>	<i>11-29874</i>

Dear Lt. Col. James Bishop:

The Natural Heritage & Endangered Species Program (NHESP) of the Massachusetts Division of Fisheries & Wildlife has reviewed the Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for the Grade and Pave Shoulders on Runway 15/33 Project at the Westover Air Reserve Base. At this time, we would like to offer the following comments.

The project site is located within *Priority* and *Estimated Habitat* as indicated in the 13th Edition of the MA Natural Heritage Atlas and is mapped for three grassland bird species and two invertebrate species. These species are listed pursuant to the Massachusetts Endangered Species Act (M.G.L. c. 131A) and its implementing regulations (MESA, 321 CMR 10.00).

The NHESP believes the proposed project will impact state-listed species and their habitats. In particular, work during the grassland bird breeding season (May 1 – August 15) will result in the direct harassment of individual birds, the disturbance of birds from their territories, the loss of nests, and the likelihood that unfledged chicks will be killed. These impacts will result in a significant reduction in reproductive success during the year of work for these state-listed species. Additionally, the project results in a net loss of available grassland habitat.

To significantly reduce the potential impacts to the grassland birds, the shoulder work on Runway 15/33 should occur after August 15th. This is a slight modification of Alternative 2 proposed in the EA. The NHESP also requests that additional grassland areas be created and maintained as habitat to off-set the permanent loss of grassland habitat that will occur as a result of this project. In addition, the areas that are

going to be graded should be re-seeded with a warm season native grass mix which includes species such as little blue stem grass (*Schizachyrium scoparium*).

Finally, the contractor's "plan to minimize habitat disturbance" (as discussed on page 27 of the EA) should be submitted to the NHESP for review and should incorporate the modification to Alternative 2 discussed above. If you have any questions about these comments, please contact Scott Melvin, Ph.D.,

www.masswildlife.org

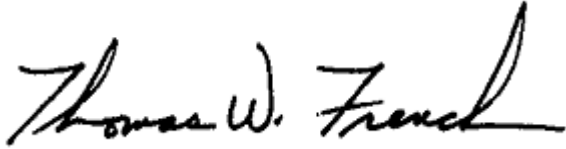
Division of Fisheries and Wildlife

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An Agency of the Department of Fisheries, Wildlife & Environmental Law Enforcement

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Zoologist, at (508) 389-6345 or Eve Schlüter, Ph.D., Endangered Species Review Biologist, at (508) 389-

A handwritten signature in black ink that reads "Thomas W. French". The signature is fluid and cursive, with the first name "Thomas" and last name "French" clearly legible.

6346. We appreciate the opportunity to comment on this project. Sincerely,

Thomas W. French, Ph.D. Assistant
Director



DEPARTMENT OF THE AIR FORCE
AIR FORCE RESERVE COMMAND

12 December 2011

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Thomas W. French, PhD
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Natural Heritage & Endangered Species Program
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Dear Dr. French

Thank you for your agency's comments in your November 30, 2011 letter about the Environmental Assessment (EA), Draft Finding of No Significant Impact (FONSI), and supporting documents for the project to grade and pave the shoulders of Runway 15/33 here. The NHESP Tracking No. is 11-29874. The letter and this response will be included in an Appendix to the EA. The comments (in italics) and Westover ARB's (WARB) responses are set forth below.

"...work during the grassland bird breeding season (May 1 – August 15) will result in the direct harassment of individual birds, the disturbance of birds from their territories, the loss of nests, and the likelihood that unfledged chicks will be killed. These impacts will result in a significant reduction in reproductive success during the year of work for these state-listed species." Those outcomes are not inevitable and the project is not likely to have greater impacts than the current day-to-day situation, which includes airfield mowing during the breeding season. EA Figure 6 sets out the WARB requirement that the construction contractor minimize disturbances to breeding birds. WARB will monitor the contractor's adherence to that requirement. Alternative 2 as written in the EA could markedly reduce the likelihood of those outcomes.

"Additionally, the project results in a net loss of available grassland habitat....The NHESP also requests that additional grassland areas be created and maintained as habitat to off-set the permanent loss of grassland habitat that will occur as a result of this project." The net loss of marginal grassy habitat due to paving the 25' shoulders and demolishing/seeding Apron J is about 2.9 acres. WARB has already created approximately 33.5 acres of grassy cover north of Pad 33. It is contiguous to a much larger area of grassy cover. WARB cannot commit to always maintaining any of those 33.5 acres as grassy cover because future mission needs may require

that it be used for another purpose. Most of this area is close enough to Runway 15/33 and to Cooley Brook that development is not likely. However, maintaining it as a grassy cover area is consistent with Bird/Wildlife Aircraft Strike Hazard (BASH) directives and our Integrated Natural Resources Management Plan INRMP).

“To significantly reduce the potential impacts to the grassland birds, the shoulder work on Runway 15/33 should occur after August 15th. This is a slight modification of Alternative 2 proposed in the EA.” Alternative 2 would help to minimize impacts on breeding grassland birds by grading the shoulders outside of the breeding season. Grading all of the shoulders after August 15th would further minimize those impacts by leaving the grassy shoulder habitat intact before that season.

The construction contractor is required to submit a plan to minimize disturbance of breeding. It appears at this time that Alternative 2, as modified to do most grading after a certain date, could provide a viable option for inclusion into the plan. “Most grading” might need to be limited to that beyond 30’ from the current paved edges of the runway. It may be necessary for the contractor to be able to grade 30’ and pave 25’ of the shoulders before the given date to efficiently integrate that work into the effort on the runway itself. The extra 5’ of grading would allow the contractor to later correct the grade of the shoulders further away without damaging the newly paved shoulders.

The WARB BASH Mowing Map and INRMP use a consensus date of 31 July each year as the end of the grassland bird breeding season to allow the disturbance of mowing the entire airfield. Table 1 of the EA shows that by 1 August almost all grassland birds at WARB will be beyond their breeding vulnerability dates. Thus 1 August will be the date to start grading beyond 30’ from the runway if grading that area is deferred until after the breeding season.

“In addition, the areas that are going to be graded should be re-seeded with a warm season native grass mix which includes species such as little blue stem grass (Schizachyrium scoparium).” Planting grasses adapted to the area is consistent with Air Force Pamphlet 91-212, 1 February 2004, Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques, paragraph 2.3.1 Grass Management. However, the Air Force Safety Center BASH Team visited WARB in 2010. They wrote in their trip report, “Bunch grass such as Little Bluestem provides excellent habitat for wildlife and must be kept away from aircraft movement areas. Bluestem is grazed by deer and the seed is eaten by song birds and upland game birds. It also provides cover and allows ease of movement for ground birds and small mammals. Replace Bluestem within 300 feet of movement areas with an endophyte infected tall fescue grass.” This runway and shoulders project is largely within that 300’ area.

Tall Fescue may be invasive in settings favorable to it. It failed to grow in airfield test plots at WARB in 2008-2009, but has grown on base lawns where sandy soils are amended with loam and fertilizer. WARB has not resolved with the BASH Team whether it is appropriate to use tall fescue in the airfield environment here. WARB plans to analyze the environmental impacts of replacing Little Bluestem with Tall Fescue in a separate EA or Environmental Impact Statement concerning other airfield construction and management. In the meantime WARB plans to plant a monoculture of Little Bluestem with a suitable annual grass nurse crop on the airfield.

"Finally, the contractor's "plan to minimize habitat disturbance" (as discussed on page 27 of the EA) should be submitted to the NHESP for review and should incorporate the modification to Alternative 2 discussed above." As a courtesy for this project, WARB will provide a copy of the plan for NHESP review, and will consider timely comments in deciding upon the adequacy of the plan. However, in accordance with the EA, WARB is the final approval authority for the adequacy of this plan.

Sincerely

A handwritten signature in blue ink, appearing to read 'Andrew G. Milroy', is positioned above the printed name.

ANDREW G. MILROY